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Original Contributions.

THE MUMMIFICATION OF PULP-TISSUE.

BY H. PRINZ, D.D.S., ST. LOUIS. READ BEFORE ST. LOUIS DENTAL SOCIETY, OCT. 9, 1900.

In presenting to the members of this society the somewhat "burning" question of pulp-mummification, the essayist wishes to state that he has made an effort to epitomize the present literature on the subject as far as possible, to which are added his own experiments.

The assertion has been made by writers on and practitioners of dentistry, that they could successfully remove all pulp-tissue from any root-canal and consequently fill such canals to the very apex. This I do not believe. Such statements can be verified only by ocular demonstrations, and as unfortunately this cannot be done except in a minute fraction of cases, we have a right to doubt them, honestly as they may be intended. A thorough study of the anatomy of the teeth will convince any one of the impossibility of such a procedure; but that certain men by their superior dexterity have obtained better success than others goes without doubt. The buccal roots of the superior and the mesial roots of the inferior molars, and occasionally of the first bicuspids, present the greatest obstacles against instrumentation. By questioning gentlemen, who have admitted that they cannot in all cases successfully remove all pulp-tissue, as to what they do with such teeth, they have said that they treat them like all others, and trust to providence for their future welfare.

A minute particle of non-sterilized, infected material left in a canal will sooner or later cause disturbance, with all its sequellae, and as a result the tooth must usually be sacrificed to the forceps. This statement may be contradicted by the fact that a large number of teeth which belong to this class have been successfully filled. No doubt this is true, but the success of the operation is due entirely to mode of treatment, viz., surgical cleanliness, and consciously or unconsciously mummifying any remnant of pulp-tissue present by

the persistent use of strong antiseptics. Arsenious acid alone, or in combination with tannic acid, as employed for devitalization, and certain essential oils, such as oil of cassia, as used for canal treatment, are known to be superior embalming agents, and I attribute the success of such an operation to the liberal use of these materials.

Let us turn now for a few moments to the literature upon the subject. More than half a century ago, as Flagg informs us, the dentists tried the then newly-discovered creosote in connection with such work, while for the last twenty years he employed a paste consisting of carbolic acid, oil of cloves, sulphite of lime and acetate of morphia. In 1874 Adolf Witzel of Essen made an effort to solve systematically the problem of pulp-mummification. He advocated the amputation method, which, if I am correct, was first practiced by the late Allport. Witzel believed that arsenious acid would devitalize only the inflamed part of a pulp, which after extirpation would leave the healthy stump in the canal. The portion left he treated like any other pulp-exposure. In 1886 he changed his views, and spoke about these pulp-remnants as being "shrunken to antiseptic threads," etc. In 1882 Telchow of Berlin made known that he had found in Wickersheimer's preserving fluid a medium with which he could successfully mummify pulps. This fluid is a complex mixture of alum, arsenic, various salts, methyl-alcohol and water, and is used as a preserver for anatomical specimens. It never gained popularity in this connection. Baume in 1888 published his method of preservation of pulp-stumps by embalming them with borax and alum. The crown of the pulp was amputated after cauterizing, and small pieces of borax brought in direct contact with the stumps and covered with tin-foil and cement. The borax method, as might be expected, was a failure. In 1892 Herbst of Bremen advocated a method of pulp-amputation which for some time was much lauded abroad and in the States. The exposed pulps he treated with a mixture of 92 parts native cobalt (normal cobaltic arsenate) and 8 parts cocaine. After a few days, the coronal portion was removed under aseptic precautions, the cavity sterilized and tightly closed with soft tin burnished into place by his rotation-method. This is practically the old arsenic-method with some modifications. For a time these teeth may be at rest, but after about five years we can expect fifty per cent to have abscessed, and rightly is this treatment discarded. Miller of Berlin is the next

prominent member of the profession to spend much time in solving the problem. A detailed description of his mode is found in his works. After much experimenting he finally advocated small tablets, consisting of corrosive sublimate $\frac{1}{2}$ gr. and thymol $\frac{1}{2}$ gr., which he used in much the same manner as Baume recommended for the application of borax. The success obtained with these tablets has been very satisfactory; the only objection is the bluish-black discoloration of the tooth from the sublimate. Soderberg of Australia published a highly interesting account of his method in 1895. He modified Miller's formula by substituting alum for sublimate, and added zinc oxid and glycerin to form a paste. The results obtained with this material have been very satisfactory. Waas, 1898, and Houghton, 1899, are highly enthusiastic in their praises of the good results; neither one claims to have ever had "a failure to record for such work or even one complaint of tenderness." In 1898-1899 Boennecken of Prague published his method of mummification by using a paste consisting of cocaine, thymol, formaldehyd, zinc oxid and glycerin. His experiments and success with this paste were highly pleasing, and his method has gained many friends in Europe and in America. Formaldehyd, by its superior qualities as an antiseptic and strong coagulant (tanning agent), suggests itself at once as being much more effective than any of the other drugs so far used. In 1899 appeared an article by Dr. Brooks of Martinez, Cal., in which the use of chromic acid in conjunction with sulfuric acid was highly recommended for pulp-mummification. As is known from practical histology, certain salts of chromium will, if added to animal tissues, harden them—the albumins are changed to compounds which are insoluble in water. In other words, a process of tanning takes place. It should be remembered that chromic acid is an explosive agent—"when brought in contact with alcohol, ether, glycerin, or other organic solvents, decomposition takes place, sometimes with dangerous violence." U. S. P. Late in 1898 Julius Witzel of Cassel, Germany, published a paper on the action of formaldehyd and sulfuric acid upon the pulps and periostium of the teeth. From his presentation of the matter, and from Lepkowski's paper on the use of formaldehyd (Dec. '99), I have gained much information. A host of other practitioners have written on the subject of pulp-mummification; some have praised this operation, while others condemn it as being absurd and unscientific.

The question now arises, when and where is the mummification of pulp stumps justifiable? For practical purposes it is sufficient to diagnose three stages of pulp-disease: 1. Hyperemia. 2. Inflammation. 3. Gangrene. The first and last stages are excluded from our present consideration. Hyperemia can be remedied by proper medicinal and surgical treatment, while gangrene requires methods of treatment peculiar to itself. Only those pulps which are partially or totally inflamed are eligible to the mummifying process. What conservative treatment can accomplish with an exposed healthy or inflamed pulp is not within the scope of this paper.

After the devitalization of a pulp all available efforts should be made by the conscientious practitioner to remove as much of the pulp-tissue as possible! This point I wish to especially emphasize. Even if we are now able to entirely mummify a pulp, this method should not be practiced indiscriminately, as it is antagonistic to one of the fundamental laws of surgery, which teaches us to remove all necrosed tissue, and further, it may create a tendency to carelessness and imperfect work on the part of operator. Therefore, again let me state, that only in such cases as it is utterly impossible to remove all the pulp-tissue is application of the mummifying principle justified?

Mode of application: Apply arsenious acid to the exposed pulp in the usual manner. The dressing should be left undisturbed for at least four to five days. By this time the devitalization is more complete, and the dental fibrillæ and odontoblasts which form the junction between dentin and pulp are more disintegrated and therefore facilitate removal of the whole pulp at once. It is advisable to place a small quantity of the mummifying paste upon the devitalized pulp for one or two days. By now removing the pulp one will be often greatly surprised to find it to come away entire, "hard and stiff as a fiddle-string." But in such cases where we have tried in vain to remove all of the pulp-tissue, we enlarge the pulp-chamber and the canals to about one-third their length. The cavity is then washed with a solution consisting of one part formaldehyd to two parts of water, making about a ten per cent solution. With the warm-air blast we try to saturate the pulp-stump thoroughly. This formaldehyd bath, as Boennecken calls it, is very essential. By the great penetrating power of formaldehyd the whole stump will be impregnated and any products of decomposition present at

once rendered neutral. If the pulp shows any sign of life it will react immediately, but surrenders soon, as formaldehyd acts practically similar to arsenic as a caustic. The formaldehyd-solution should be prepared fresh every four weeks and should be kept in amber-colored bottles. After this preliminary step, the paste proper is applied with sterilized smooth broaches, the canals and crown portion are filled with it, a disk of asbestos-felt, previously sterilized in the flame, placed over same, and the whole covered with cement. The filling can be completed at same sitting with whatever material is indicated for the case.

About five years ago I made my first experiments in regard to pulp-mummification. At that time glowing reports were published about the wonderful antiseptic properties of formaldehyd, using Soderberg's alum-paste as a basis. I substituted at first the liquid and later on the dry formaldehyd for the alum, on the ground that this drug is a superior tanning agent and at the same time possesses a remarkably strong germicidal power. If animal tissue is brought in contact with formaldehyd the albuminoids are changed to an insoluble compound—they are tanned. Tissues shrink but very little or not at all if preserved in such solutions. This is a most important point in regard to the pulp-stumps left in the roots, for they keep the foramina hermetically sealed. Formaldehyd has a very great penetrating power; it will combine with ammonia-compounds which are the result of putrefaction of the nitrogenous material of animal tissue, rendering these compounds inert. The liquid formaldehyd does not preserve its antiseptic power for a long time; the solutions of the gas in water can not be concentrated above 35—40 per cent. But the dry formaldehyd, known as trioxymethylene or paraformaldehyd (paraform), a polymerized form of this gas, offers a ready substitute. So long as a minute particle of this paraformaldehyd is left in contact with dead animal tissue, the tissue is absolutely sterile, and any microorganism or infectious product brought within its reach will be promptly rendered inert. The normal temperature of the mouth is sufficient to cause a slow stream of formaldehyd gas to be generated, creating a continuous process of sterilization. Thymol, a part of the original formula of Miller, I have retained. It also is a very strong antiseptic, and being very slowly soluble in water, it has a more lasting effect. It is stated that thymol combined with certain other drugs is used with great

success for preserving anatomical specimens. Paraformaldehyd and thymol have not "body" enough to make a suitable paste; zinc oxid, an inert substance, is therefore added, and very little glycerin is needed to give the mixture the proper pasty consistency. Cocain as part of the paste, as suggested by Boennecken, to make the application painless, is unnecessary. Any vitality left in the pulp-stump will promptly manifest itself by the formaldehyd-bath.

The formula reads now: R. Paraformaldehyd, Thymol aa 3j; Zinc oxid 3ij; Glycerin q. s. to make a stiff paste. Keep in amber-colored, well-stoppered bottles. This paste will keep any length of time without changing. Occasionally (in warm weather) a drop of glycerin will separate, but it can be drained off.

What will become of the pulp-stumps? may now be asked. For experimental work I have used the pulps of calves' teeth, as they are more suitable than those of human teeth. These pulps were placed in proper-sized glass tubes, one end sealed with wax, and upon the other end the paste was applied, according to the above given directions, and sealed over with wax. Pulps treated with formaldehyd solution alone were very readily penetrated by the liquid—it took only a few hours; while the paste, if used without the solution, would not accomplish this in less than from 15—25 days. Hence the importance of the formaldehyd-bath. The same experiments were repeated upon recently extracted teeth with undecomposed pulps with similar results. I had occasion to watch similar experiments in the mouth, and the results showed the same gratifying data. The pulps became a semi-elastic mass, resembling somewhat crude rubber, and filling the canals completely. In all experimental cases I have been able to demonstrate the presence of formaldehyd at the very end of the pulp by the aid of Liebermann's phenol test for formaldehyd, which is as follows: Cut off a few millimeters of the apical part of a mummified pulp, place it in a test-tube in about 15 c. c. distilled water, heat for a few minutes and add a drop of a very dilute aqueous phenol solution. Then pour this mixture slowly upon concentrated sulfuric acid in a test-tube, so as to form a layer. A bright crimson color appears at the zone of contact, indicating the presence of formaldehyd.

Pulp-mummification has passed the experimental stage, and although still in its infancy, has gained a place in dental therapeutics which will become more prominent in the near future.

LACK OF DENTAL EDUCATION AMONG THE PEOPLE.

BY R. G. PORTER, D.D.S., PETOSKEY. READ BEFORE THE MICHIGAN STATE DENTAL ASSOCIATION, AT KALAMAZOO, JUNE 11-18, 1900.

Knowing as we all must the extreme delicacy attached to a discussion of this subject, owing not only to the danger of being criticized by fellow practitioners, but also to the possibility of being called down by our dental societies for advertising if we are not very careful in the methods employed, you may judge with what feelings of reluctance I consented to write upon this topic.

The object of this paper is not to teach members of the dental profession things they do not know, but rather to call to mind the necessity for more diligent and persistent effort in the discharge of our duty as teachers as well as philanthropists in matters dental. We believe this subject should receive special attention, because all other topics in the general practice of dentistry will more readily take care of themselves, for the reason that they seem more apparently and directly remunerative. In view of the existing lack of dental knowledge among the people, this subject is "the paramount issue."

The masses, with but few exceptions, are ignorant of the value of the organs of mastication in relation to the first great principles of digestion and assimilation; ignorant of the physiological effects of the deciduous teeth in relation to the permanent; ignorant of the bad effects of pathological conditions of the first as well as of the permanent teeth, and the dire results of such upon the health of the individual, be it child or adult; ignorant as to the myriads of germs of various diseases which multiply, both in health and sickness, by geometrical ratio, in what is acknowledged to be the best of all incubators, the mouth; ignorant that an acid reaction in the mouth injures the enamel of the teeth, whether the acid is taken directly into the mouth or is formed there by decomposition of the food; ignorant that mixing food during mastication and insalivation with the debris common in neglected mouths is very unwholesome; ignorant that cleanliness, *in the mouth*, is next to godliness, and that broken laws or neglected opportunity in dental hygiene are sure to bring a multiplicity of punishments; ignorant that certain simple rules carried out with conscientious regularity will bring a rich reward.

The care of the teeth begins with the cradle. It is deplorable

that so many mothers are so ignorant, so careless, so indifferent to the welfare of their children's teeth. From the dental profession alone must come the much needed help. The people are crying out to us for more knowledge, and what is needed at the present time is the simplest kind of instruction. We can not hope to educate the older men and women very much on this important subject, but our effort should more especially be spent upon the children, youth and young people.

The difficulty seems to be the lack of method or methods to communicate this enlightenment without infringing upon our most valued Code of Ethics. One plan which seems feasible that I would like to present for your consideration is, that this Association appoint a committee whose duty it shall be to see that every school-board in the state be instructed and advised to invite one or more competent dentists from their community to deliver to the public schools during the winter term short, condensed, instructive lectures on dental physiology and hygiene, which shall also be printed in the county papers. This can be done with little expense.

In this way we are not only impressing the teachers with the importance of the question, but are educating the rising generation, and through the press are reaching many who are beginning to realize their lack of dental knowledge and the importance to them and to their families of remedying the matter.

There is also a great opportunity for instruction in our colleges, normal and industrial schools, where hundreds are fitting themselves for the profession of teaching and going out to take charge of common schools in all parts of the state. In the effort to impart instruction through the teachers to the scholars of the common schools, we have found the teachers, without an exception, willing and anxious to communicate this knowledge to their several classes, the results of which in numerous cases brought to our attention have been very gratifying.

We believe also in every dentist having cards or small folders upon which may be printed for instance: No. 1. Instructions to the mother on the care of the teeth of children. No. 2. Simple, brief instruction on the care of natural teeth for adults. No. 3. Reasons for proper care of artificial dentures. These will be found of benefit to the patient and save the dentist many words and much time. Can we expect the people to be protected from the wiles of

the dental charlatan until they are sufficiently educated to intelligently discriminate between intelligent and skillful effort, and the bungling snob who is practicing a profession for revenue only?

NO. 1—TO MOTHERS.

Remember, that you are *responsible* for the condition of your child's teeth.

By *nature* a child's teeth should not decay, and should in all cases be kept free from decay. They should be retained and kept sound.

First. Because the jaw is not retarded in its natural growth, and space is made for the second or permanent teeth, which are consequently not so liable to come in crowded or irregular.

Second. If the teeth decay it will cause discomfort in chewing, and the natural tendency will be to swallow without mastication. This will injure the child's digestion and endanger its health.

Third. Any decomposing substance in the mouth, either from decay of the teeth or of food-stuffs having been left from a previous meal, mixed with food and swallowed by the child, is detrimental and may bring about some form of disease.

The first or temporary teeth should number twenty.

The first permanent molar tooth the child gets when about six years old—a large tooth which comes just back of the temporary molar teeth *before* they are shed (or come out). This tooth is *permanent* and is never replaced by another, and is also quite liable to decay. *Look* for it and attend to its needs.

See that the child's mouth is cleansed after each meal with a soft cloth, when very young, and with a small brush and water after teeth erupt.

Take the child to your dentist from two to four times a year for examination.

Teach the child when old enough to take care of his *own* teeth.

NO. 2—IMPORTANT.

First. Remember that your health depends largely upon the condition of your teeth.

Second. That mastication is the first and a very important principle in digestion.

Third. That disease germs of all kinds form rapidly in the mouth and may be the cause of sickness.

The following simple directions are to assist you in the preserva-

tion of your health and natural teeth, and same if followed with persistent regularity will prevent decay of the teeth: Cleanse the mouth, using a quill toothpick or floss silk and a good brush after each meal. If necessary, and prescribed by your dentist, use a tooth-powder or mouth-wash. Have your teeth examined at least twice a year.

DISCUSSION. *Dr. N. S. Hoff:* No matter how intelligent a community is, we are continually brought face to face with gross ignorance of oral hygiene, and that in matters with which every one should be familiar. How few of our patients know how to brush the teeth effectively, and yet many dentists never instruct them along this line. On the other hand, some people brush their teeth too much—in many cases not then getting them clean, and whether or not this result is attained, the teeth and gums are often injured by excessive use of too hard a brush or gritty tooth-powders. Massage is good for the gums, but like all good things it can be carried to an extreme. Pyorrhea may not be a filth disease, but an unclean mouth helps its progress, and if patients could be convinced of this their cooperation might be enlisted. No honest-minded man need be afraid of infringing the code in this work, for it is of the highest professional order. While the unscrupulous man can make an advertising scheme of it, no honorable man will reach even the danger line.

Dr. L. P. Hall: Little children are always impressed by the physiology taught in school, and would give heed to what a dental lecturer might say. An examiner ought to visit the schools and examine each child's mouth, for many people able to pay for dental services would see that their children's teeth were cared for if the matter could be brought to their attention in this way. Advice to parents should come from the school board, as it would be resented or wrongly judged if given by dentists or dental societies.

Dr. E. N. Root: My six-year-old boy has something interesting to tell about school work almost every day, and if he has been given any instructions, the house is turned upside-down until they are carried out. I believe one word from the teacher would have more effect than a long talk from parents.

Dr. C. F. Metcalf: The most important fact to be impressed upon parents is, that if the teeth are kept absolutely clean they can not decay.

Dr. J. N. Crouse: The most important thought in connection with this subject has not been touched upon. We know that teeth decay at one time of life and are immune at another. We know that in the same family the teeth of one child will decay more than those of another, with the same kind of food. We know that the most delicate-looking individuals will often have the least difficulty with caries of their teeth, and *vice versa*. The great problem which the dentist has to solve to-day is this: Why are teeth immune from decay under so many different circumstances? Miller and others have discovered that the decomposition of starchy matter is brought about by microorganisms, which produce an acid and cause cavities to form in the teeth. Now, we have the starchy matter in some mouths, and we have the microbes and no cavities. I have in mind a young lady who has been in my care for twenty years. She came to me when a baby, very delicate, had curvature of the spine, wore a brace for a time, yet she never had a symptom of decay in her teeth. In the same family is a young man who is very vigorous, yet his teeth are never immune from decay; it is going on all the time. When we get to the point where we know what brings about this difference we shall be able to state facts, and something will be accomplished in the way of overcoming decay.

When I first commenced practicing in Chicago there was a journal published by the dentists to educate the community, but it soon aroused jealousy and a great fight; the dentists who were not in it thought the others were trying to take advantage of them, and the project wound up in defeat.

Dentists must keep their own teeth clean if their advice is to have any weight with patients, yet there are a great many practitioners who do not think the state of their own mouths cuts any figure. How many patients come to your office with clean teeth? It is rarely that they are effectively brushed. I generally take a mouth-mirror and hand-glass, before starting to operate, and show patients how dirty their teeth are, so they dare not come again until they are well brushed. A pledget of cotton dipped in peroxid and applied to the teeth before the patient, with an explanation why it foams, is a good object-lesson. Next time the teeth will be better brushed; and this is true with children as well as adults. I have been practicing in Chicago thirty odd years, and have as patients

grandmothers, mothers and children, and it has been my pride to now and then have a family come to me with their teeth brushed. When I have accomplished this I have done about as much as I can do in any one line. When a child is sent home once or twice, the importance of brushing his teeth is impressed upon him, and he returns with them clean. I often send even youths home with a note—"I have sent this child back to brush his teeth; he need not return until he does."

VOICE: How much do you charge for that appointment?

Dr. Crouse: In taking that action I am giving just as much service as a physician who writes a prescription, or a lawyer who gives a little advice and charges a handsome fee. I try to make the thought of unclean teeth just as disgusting as possible, and come very near doing it. That goes a long way, and the sister and brother of that child get onto the racket, and take the chair with a deal more fear on the subject.

PREPARATION OF CAVITIES FOR CONTOUR FILLINGS.

By WM. E. HARPER, D.D.S., CHICAGO. READ BEFORE THE MICHIGAN STATE DENTAL ASSOCIATION, AT KALAMAZOO, JUNE 11-18, 1900.

Of the failures in dental practice it has been my experience to observe that none is more frequent and humiliating than the gold fillings of mesio and disto-incisal cavities in the centrals and laterals; and this, too, after years of experience, painstaking and conscientious effort, with a liberal dental education as a foundation. The triangular outline of the proximal surfaces with the narrow labio-lingual diameter in the incisal third of the crown, at which point the incisal and lingual force is continually exerted, is the chief cause of these failures, because of the small amount of dentin in which we may cut retention at this point.

To most effectually prevent the movement of a filling, the resistance should be cut flat in all directions and should be at right angles to the direction in which the filling is disposed to move; this applies equally to the floor or seat, which resists the incisal force in these cavities, and the retention, which is intended to resist the tipping either to the labial, mesial or distal.

In the cavity I present for your consideration (a mesio-incisal) the dentin of the cervical wall constitutes the seat and is made flat in all directions and as large as the enamel, which must be supported

by dentin, if the pulp will permit. In this cavity the resistance to force from any and all directions is more extensive and more effectually located and shaped, with the least possible sacrifice of tooth substance, than in any other method of préparation with which I am familiar. With the proper instruments it is exceedingly simple to prepare, requires less time and filling material than the step cavity, and offers greater security to the filling.

To carry out this method of preparation it is imperative that instruments of the exact size and form as those indicated be used; otherwise the essential detail, upon which the greater security of the filling is dependent, will be in part lacking. It is in these details only that the cavity differs from those prepared by many operators of the present time. For retention, operators generally make a substantial undercut at the cervical under the curves of the labio and linguo-cervical enamel wall. This is continued as a groove toward the incisal along the axial wall to the labial and lingual, and is made with a round or inverted-cone bur, which, if cut to a depth of half the diameter of the head of the bur, would leave a half-round groove. This groove is a very important factor in the cavity I present. In the modification I suggest the depth remains about the same but differs in form, being made square with instruments mentioned below.

If each of these grooves is filled solidly with gold, can there be any question as to which will most effectually resist displacement? To my mind a half-round groove offers no security, while a square groove of less depth is retentive under force from all directions. With this conclusion I angle or square out all grooves, undercuts and junctions of different walls. A square retainer, angle or groove can be more perfectly filled than a pit, groove or seat with a concave or half-rounded bottom for a foundation on which to condense the gold. I shall not attempt to argue the matter with those who question this statement, as it is best demonstrated. I would ask that you fill w'ih gold a square groove with such instruments or pluggers as it is advisable to use for filling teeth, then cut through the filling and matrix and examine under the microscope.

In cavities of this class it is generally necessary to secure separation for restoration of contour and to permit finishing. With the rubber-dam in position we proceed to cleave down all unsupported enamel, including the weak incisal angle. This is done with a

sharp, medium-sized chisel fifteen-tenths of a millimeter wide. The labial and lingual margins in their incisal half should be cut to the nearest developmental groove, as these are weak lines of enamel and should be included in the cavity. The cervical or gingival margin should be approached by a long, smooth curve, and in its middle two-thirds should be cut straight labio-lingually. If the interproximate gingivæ be normal, this margin should be located beneath it for protection. If there has been considerable recession this extension may be inadvisable, in which case the cervical margin should be located at a wide portion of the interproximate space but well away from the gum margin and the contact point. With a well-contoured filling in such a position, the saliva and ordinary prophylactic measures will give reasonable protection against further decay.

The outline of the cavity being established, with all margins located at a self-cleansing point, meeting the requirements of extension for prevention, we now take a small inverted-cone bur about eight-tenths of a millimeter in diameter, one of the two smallest sizes made, and holding the handpiece parallel with the long axis of the tooth, with a swaying motion flatten the dentin of the seat or cervical wall, extending it well beneath the labio and linguo-cervical curves of enamel; at the same time the axio-cervical angle is squared out. This makes a substantial seat and gives ample retention to the labial and lingual at the cervical. In the dentin of each of these point angles the flat end of bur is made to cut root-wise to about the depth of head of bur (not more) for retainers in which to start the gold, and from the bottom of these the bur is drawn incisally along the axial wall close to the labial and lingual enamel, making the grooves.

These are quite deep under the cervical third of the cavity, becoming shallow, about the depth of diameter of bur, at the center of the length of axial wall, at which point they again gradually deepen as they approach the incisal retention. At this point an undercut is made parallel with the cutting edge (about a millimeter and a half, mesio-distally) and as near to it as the dentin will permit. The engine may now be dispensed with. These grooves are now squared out in their entire length with hoe 6-2-6 for the cervical third, cutting root-wise, and hoe 6-2-23 for the incisal two-thirds, drawing from the cervical to the incisal. If these instruments are sharp, two or three strokes will be sufficient.

The incisal retention is next squared out parallel with the cutting edge, using hatchet 6-2-23 with a sweeping motion labio-lingually. This retention is reinforced by sloping the axial wall in its incisal third to the bottom of the incisal retainer. The lingual enamel wall is then cut away in the incisal third, leaving the labial exposed from the lingual to the extent of about eight-tenths of a millimeter; this forms a definite angle extending from the incisal retainer to the cutting edge.

The remaining labial plate is beveled at the incisal to allow the gold to be built upon it for protection against incisal force. The lingual half of the axial enamel is also beveled to a corresponding extent distally at the incisal to reinforce the enamel at this point. The entire enamel wall is now carefully examined for imperfections; any whitish spots or unsupported enamel must be removed. The finished walls should now be parallel with the direction of the enamel rods and have a clear, vitreous appearance. The enamel wall is then slightly beveled all around, the cavity margin including about one-quarter the thickness of the enamel. All debris is carefully removed and the cavity is ready to fill.

DISCUSSION. *A Member:* First, do you do all the beveling with the chisel, and second, do you make this preparation universal—that is, independent of the size of cavity?

Dr. Harper: Yes, to the first. Second, I speak only of mesio or disto-incisal cavities, not simple ones.

A Member: You speak of having some dentin next to enamel. Suppose it is not there, do you cut away until you reach supporting dentin?

Dr. Harper: No, if all were gone I could not get any. In the incisal third I always cut away unsupported enamel, but in the cervical two-thirds you can leave unsupported enamel. I have here two specimens which demonstrate this idea of filling. One is a model of a cavity prepared after this manner, and the other a filling of brass, which will give you an idea of the exact shape of such a filling. They are so cut out as to show the undercut at the incisal and cervical walls, and you will see that there is no real undercut except at the incisal. This is the tooth and filling. The tooth can not slide below because of substantial undercuts, as shown by projections on the filling model. The filling must rotate or tip out; there is absolutely no movement; if the filling comes out it must

tip out. There is not any resistance to the tipping strain at the incisal portion of fillings, but also half-way down the tooth in the square groove, which can be seen in this case, because the filling at the tip of the incisal is uncovered.

Question: What do you do in those teeth where the frail, delicate enamel almost comes together at incisal edge? I have filled many and not left any dentin between the plates and incisal edge. Some teeth are too thin to have the enamel supported by dentin.

Answer: If there has been any secondary decay, or the dentin has been cut away, you can occasionally leave the enamel at the incisal edge unsupported, but still there is some risk involved in doing so. If there is no dentin between the two plates at the incisal it is an unsafe procedure to make a contour filling; you would better extend the cavity until you get enamel supported by dentin. It may be argued that this is a good method in some teeth; I say it is good in all teeth. I carry out this method in thick teeth, labio-lingually, and find it equally good in thin teeth. I do not make the statement that you never have failures in thin teeth labio-lingually; we make failures with any method, but this is the best.

Question: In a case of that kind, instead of cutting away so much from incisal, why can't you save enamel at incisal edge and anchor the filling from the cervical portion of the cavity? For example: In order to get support from the dentin, why not cut away more from the labial portion of tooth and expose more filling if you think it is so necessary to have dentin for support? Can't you get all the support you need from the cervical portion of cavity?

Answer: The trouble is that the support at the cervical is so far away from the point at which the force is exerted. I have seen so many bites tested; I have seen one individual who could bite with his incisors equal to a pressure of 200 pounds. You do not need any support at the cervical. Where you anticipate any great force of masticating it can easily be determined by an examination of the teeth. I can estimate within ten pounds the amount of force a patient can exert with his jaws.

Question: The more you cut away from the cutting edge the more surface you are exposing, and would not pressure brought to bear upon that by mastication break the tooth?

Answer: There is not much danger, however. This portion of the labial and lingual wall is in mesial and distal incisal; if the

cavity should include one-third of the tooth it should be carried to the nearest developmental groove. All grooves are lines of weakness, and if you cut the labial wall approximately to that groove and leave enamel, it will be so weak that it will be apt to cleave. So it is my practice always, where the angle is gone, to carry the labial and lingual wall to the nearest developmental groove. It usually involves one-third of labial surface. This is a very important thing to know; in examining the developmental grooves under the microscope this fact is impressed upon you.

Question: How would you modify this formation if cavity extends a little further over to median line of tooth.

Answer: I should carry out the same kind of preparation, and cut a step to carry it out to that point. I should use a little step to avoid leaving weak enamel at the incisal. It is not for retention, but to protect cutting edge, and will not show at labial surface.

Question: Can you condense into a groove made with an inverted cone as well as one made by round bur? *Answer:* Yes.

Dr. C. J. Siddall: There are cases where we have extreme thinness, and in such the only place where I should differ would be to cut the step at the incisal edge, and not as essayist said, bring it to the developmental groove on both labial and lingual, and if decay extend further, carry it across further; but I would bring it across and anchor on the lingual. If there should be no dentin in the tooth at that point I would carry it down a little further in incisal angle, provided there were plenty of dentin, but there are teeth in which this is not practicable. I agree with essayist that square grooves are the best.

Dr. J. N. Crouse: In teeth which are decayed so much as to necessitate extending to a considerable distance over edge of the tooth beyond the developmental groove, I carry filling over cutting edge and use No. 60 platinized gold.

Dr. W. H. Dorrance: It is a well-known fact that a square line or angle is always the weak spot in any structure; at the same time I recognize that the proper condensation of gold is obtained in these cases without the strain caused by spreading of gold; therefore I entirely agree with the essayist. As to the point made by Dr. Crouse, my experience has been that a filling made in this manner must be very thick; even platinized gold will force the plates of enamel apart.

Dr. N. S. Hoff: The objection I have to such preparation of cavity is, that in cutting these grooves with square angles you threaten the structure of tooth. It doubtless secures better anchorage for filling but at the sacrifice of tooth substance; and that is one objection to this sort of preparation, it subjects enamel to a strain in many cases which it will not stand. In reference to the objections that Dr. Harper makes about filling round grooves, I fill the grooves lengthwise or axially, and not crosswise. It is easier to fill a round hole than a square one. We can condense the gold into the round groove a great deal easier than into the sharp angles.

The illustration used by Dr. Harper does not fairly represent the conditions of a properly prepared cavity. He illustrates an attempt to fill a single shallow groove by condensing the gold laterally, when the fact is that we have two grooves connected by body of filling, making a dovetailed groove into which it is easy to pack the gold.

Another objection: If you cut the enamel until the dentin supports it you leave such a broad surface to the border of cavity that when you adapt the gold to it the gold will rebound and leave the border and we do not get a close joint. We can relieve this to some extent by building up from the bottom of the cavity, contouring it out, but it is difficult to adapt the gold closely to such a large flat surface.

Dr. C. P. Wood: The objection to the angle is that it weakens the tooth. If you can have an angle one-third the depth of a curved undercut, why does it weaken the tooth any more than a round groove which is just as deep?

Dr. Hoff: It breaks at the angle, when it would not in a rounded corner.

Dr. Wood: The angular groove is so slight, only one-third the depth of bur, that it does not weaken the tooth any more than the round groove. I make my undercuts in a great many cases with a rose bur and square with a chisel.

Dr. Harper: The preparation of this cavity as explained has not been developed from any theory, but from the necessity for greater security in the retention of these fillings. Examine the failures closely as they come under your observation. It is not the angle breaking down where we tip it out, but it is in the incisal

third, and because of the lack of proper resistance to the tipping strain. You must get the maximum strain further down on the labial and lingual. It is said that a tooth is not so strong where we use square grooves as round. I will concede it, but that is not what causes these failures; they result from lack of security in this incisal retention which is reinforced in this method of preparation by shallow, square grooves. They can be one-fourth or one-half the depth of the round grooves and still be ten times as strong. There is no retention of the gold by a round groove. Any one who is interested in this subject can be convinced by preparing and filling two similar cavities, one with square and the other with round grooves, and then breaking the teeth and examining with a magnifying glass.

HEMORRHAGE AFTER EXTRACTION.

BY W. M. BARNETT, D.D.S., LOS ANGELES, CAL.

In looking over some old copies of the DIGEST I see an excellent article in the September, 1898, issue by Dr. H. Prinz, on "Hemorrhage Following Extraction." I would call the attention of the readers of the DIGEST to a treatment which I have found absolutely satisfactory. With hypodermic syringe inject a few drops of three per cent pyrozone solution or peroxid of hydrogen in the apex of each alveolar socket and around the gum margin. The instantaneous expansion of either remedy stops all hemorrhage immediately. I tried this in one case where severe bleeding started six hours after the tooth was extracted, and all hemorrhage was stopped ten seconds after application. This treatment is excellent because it does the work without inconvenience to dentist or patient, which cannot be said of any other method known to me.

METALLIC SHELL-DIE FOR RUBBER PLATES.—Take two impressions. Varnish the better one and set aside to dry. In the other pour a model, to which carefully adjust Stuck's tin 32 to 34 gauge. Do this with the fingers, using spunk in foil carriers to bring to close adaptation. Cut and lap if inclined to pucker in places. When satisfactorily fitted, transfer the tin plate to the other impression, forcing it into every depression and undercut, using spunk, ball burnisher, etc., if necessary. Remove the impression and you have an ideal model. After waxing up the teeth, and when the case is ready for the flask, place another piece of tin over the whole, burnishing close to the teeth. Vulcanize between these two metallic surfaces and you will have a dense, tough, flexible plate with rugae plainly defined, and results such as are not attainable by any other method.—W. K. Slater, *Dental Headlight*.

Digests.

FURRING OF THE TONGUE IN HEALTH AND DISEASE.
J. Müller (*Munch. med. Woch.* Aug. 14, 1900) believes that the coated tongue so often observed in perfectly healthy individuals is largely due to excessive proliferation of the hairlike appendages of the filiform papillæ rather than to any extraneous deposit. Some persons have a greater tendency to this overgrowth than others, and it is found less frequently with advancing years. In disease it is not to be regarded as an indication of the condition of the alimentary tract as popularly supposed, though it is nearly always present in acute diseases, whether involving the digestive system or not. In chronic cases it is not nearly so constant, being often absent even in chronic gastritis. On examination of the deposit from a large number of cases it was found that there was no appreciable variation in character in different diseases, and that the average proportions of the epithelial cells, bacteria, mould, portions of food, and leucocytes in the mixture were fairly constant. In two diseases, however, viz., pulmonary tuberculosis and gastric carcinoma, the number of leucocytes is uniformly so large as to be a characteristic sign. The causes for the formation of this deposit are numerous. The mechanical element is of importance, for most patients are taking greatly decreased amounts of nourishment or subsisting largely on fluids, so that the normal scouring of the tongue through mastication and deglutition is interfered with. In many diseases there are increased formation and death of epithelial cells as a result of local congestion and serious infiltration—in fact, a desquamative catarrh which contributes largely to the coating. Changes in the bacterial flora of the mouth, as well as reflex nutritive and vaso-motor impulses, also play their part, and, lastly, individual idiosyncrasies and the predisposition to increased growth and size of the filiform papillæ must be taken into account.—*Med. Rec.*

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ORAL SEPSIS AS A CAUSE OF DISEASE. By William Hunter, M.D. I have described cases identical with some of those referred to by Mr. Goodlee at a recent meeting, and shown—a point not even referred to by any, even the most recent writers on diseases of the stomach—that not only is the constant swallowing of pus a most

potent and prevalent cause of gastric trouble, but that the catarrh set up is not simply irritant but actually infective, and may lead in time to other more permanent effects—namely, atrophy of glands and chronic gastritis, and in certain cases even to suppurative gastritis.

This result is, however, by no means confined to and associated with any one mouth condition, such as pyorrhea alveolaris; and I especially desire to draw attention to this point, since I note that several of the speakers desired information as to what degree of pyorrhea was necessary to produce the various ill-effects referred to. I have to point out that for every case of gastric or other affection traceable to pyorrhea a hundred cases equally well marked are daily to be found associated with other dental and oral conditions of sepsis. In short, I deprecate this subject of oral sepsis and its effects being brought under discussion in connection with any one pathological condition of the mouth. The list of such conditions might be increased almost indefinitely. In my own experience they include not only pyorrhea, but stomatitis and gingivitis of every degree of severity—"erythematosa," "pustulosa," "ulcerosa," "gangrenosa," and indeed every other form of trouble, dental and oral, producible by septic infection, for which an appropriate adjective can be found. The list, moreover, includes in my experience others for which a suitable qualifying adjective cannot so readily be found, and which I may describe as "foul-septic-toothplate" stomatitis, "bridge" stomatitis, and "gold-cap" stomatitis; this latter group is, I venture to think, considerably on the increase in this era of conservative dentistry and high professional mechanical skill.

The important fact to be recognized is that one and all of these various conditions are septic in their nature and produced by pus organisms; that these organisms are invariably associated with every case of dental caries, however slight; and that the question of effect in any one case is a matter of individual resistance. The cause underlying them is oral sepsis of the most marked character. This sepsis, moreover, is of a particularly virulent character. For it is connected with disease of bone (that is, of teeth); and a somewhat extensive pathological experience has satisfied me that no pus organisms are so virulent as those grown in connection with necrosing bone.

No physician or surgeon would tolerate for a moment that a

patient with a foul septic ulcer, say in his forearm, should from time to time apply his lips to the ulcer to clean it. Yet this is—pathologically—precisely what happens in the case of patients with necrosed teeth and stomatitis. Moreover, the swallowing is constant, and goes on for years, unheeded both by patient and doctor.

I recently saw a patient, a lady, who for twenty-five years had suffered at intervals of every three or four weeks from most inexplicable salivation and subsequent intestinal trouble, so severe in character as to confine her to bed. She had worn for the same period of time a toothplate, which she removed irregularly, and cleaned only with a tooth-brush. She displayed a condition of stomatitis connected with necrosed stumps that was quite remarkable, overlooked as it had been all that time.

I saw recently another patient, also a lady (it is among ladies that the best examples of conservative and artistic dentistry are to be found), who for several years suffered periodically from nervous attacks, complicated by gastritis and curious rashes, the whole symptom complex being regarded as gouty manifestations. I was asked to see her in one of her rashes, and found it a typical blotchy septic rash. Only a month or two before her dentist, on the strength of the first of the papers below referred to, had insisted on removing a toothplate which had partially grown into her jaw, and which had been there for several years. In relation to gastritis and gastric catarrh such cases could be multiplied indefinitely.

The matter is important, however, not only in relation to gastritis, but in relation to the whole group of infections caused by pus organisms—*local*, for example, as tonsilitis, glandular swellings, middle ear suppurations, maxillary abscesses; *general*, for example, ulcerative endocarditis, empyemata, meningitis, nephritis, osteomyelitis, and other septic conditions. Whence do they gain entrance into the system? They are not ubiquitous, as was formerly thought, nor are they necessarily disease-producing from their mere presence; for example, on skin, in the mouth, or in the intestinal canal. But given the suitable conditions, namely, diminished resistance on the part of the tissues, or increase of dose on the side of the organisms, they are disease-producing. These are precisely the conditions brought about in long continued necrotic and septic conditions of the mouth.

It is probably impossible to keep pus organisms out of the mouth,

just as it is impossible to prevent occasional access of tubercle, typhoid and other infective organisms. But that fact does not deter us from taking the most exhaustive precautions to keep typhoid contamination out of our water and getting into our houses; or from initiating—as is at last happily the case—measures for preventing access of tubercle bacilli, whether through air or milk.

I think it urgent, in the interests of the many sufferers from gastritis, as well as in the interests of those suffering from pyogenic conditions generally, that some similar steps be taken with regard to the mouth—the chief channel of access, in my judgment, of all pyogenic infections. We may not be able to prevent their access into the mouth any more than we can prevent them adhering to the skin. But knowing as we now do their potential qualities, there is not the slightest reason why the mouth, so easily accessible as it is to local measures, should be made a perfect hot-bed for their development and propagation.

In relation to the whole group of internal conditions caused by pyogenic organisms, I consider there is a wide field of preventive medicine open by the exercise of oral antisepsis, a field that can be worked in with the most surprisingly satisfactory results, alike by the physician, surgeon, dental surgeon and patient. And by oral antisepsis I mean no mere rinsing of the mouth with mildly astringent and antiseptic mouth washes, but (1) the direct application to the diseased tooth or inflamed gum of carbolic acid (1 in 20), repeated daily for just so long as the patient will persist in keeping his necrosed tooth; still better (2) the removal of all diseased useless stumps; (3) the most scrupulous daily sterilizing by boiling of every plate worn, and (4) on the part of dentists the avoidance of too much conservative dentistry and the use of contrivances like "bridges" which cannot possibly be kept aseptic.—*Brit. Med. Jour.*

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STARVING MALIGNANT GROWTHS ABOUT THE MOUTH. By Dr. R. H. M. Dawbarn, New York. Read before N. Y. Odontological Society, March 20, 1900. Suppose you have a case of cancer of the tongue and of the floor of the mouth, that has gone beyond the stage where there is any hope for radical cure. There is not a more hopeless individual on the face of the globe. Under those circumstances I have in twenty-two instances operated, and I shall report the results on the 28th of this month.

In 1895 I operated for the first time with the idea of shrinking a tumor by starvation. I found a small round-cell sarcoma of the naso-pharynx, completely filling it. Patient had been treated thirteen times with injections of certain mixed toxins without doing a bit of good; on the contrary, they simply weakened him still further, so he refused to continue on this line. In this case I tied both external carotids, hoping to starve the growth. In the following September I found that that growth had shrunk to about one-quarter of its former size. The patient was in excellent health. But very slowly at first, and afterward much more rapidly, the tumor began to grow, again until by January it was worse than ever. Then I operated and cut out his upper jaw with the growth. It was the bloodiest operation I ever did in my life. It taught me a lesson as to the lack of permanent value of merely *tying* both external carotids. He would have died upon the table from hemorrhage if I had not given three liters intravenously of hot saline solution right at that time. After the first operation (ligation merely) I looked up the anatomy, and found that there were between thirty and thirty-five different ways in which the tumor might still be receiving a blood supply by small anastomoses. That explains why ligating alone will not suffice, and why more radical work is needed for permanency, namely, cutting out or excising the external carotids from Dan to Beersheba. The internal carotids, it will be remembered, do not supply anything except the brain (roughly speaking), and the external do not supply the brain, but all the superficial parts. After an interval of ten days I did the same thing on the other side upon the patient under discussion. Cutting out the whole carotid is a pretty savage kind of thought, but there is not much over five per cent of mortality. I will show soon some half-dozen of these cases, dating back quite a number of years. One of them I have sent back to report to Dr. Suriani. His condition is excellent; the growth has shrunken to small dimensions. It was a very hopeless kind of case, and I was afraid at first I might have sloughing of the nose and tongue, but it has not occurred in any instance. You get no change whatever in the appearance, except that the tongue looks temporarily rather pale. Evidently the normal tissues bear anemia better than do the malignant tissues. It seems as if this plan gave these poor fellows a longer lease of life than anything I know of. If you have some charity case with a

growth of the nose or mouth, send it along, and I will be glad to pay the hospital expenses myself, because only from dozens of these cases can one form a positive opinion. Suppose we have a case of sarcoma of the alveolar process of the upper jaw, not very far advanced. If I excise the superior maxilla, and it is in the case of a young woman, the chance of her entering into wedlock is reduced several hundred per cent. That is not to be forgotten. If the patient is under observation all the time, it seems to me to-day it would be justifiable to cut out her carotids. You cannot see the scar from this at a short distance, and it may be that the growth will not spread. It may even diminish, and it would not be such a mutilating and disfiguring operation as cutting out a large part of or the entire upper jaw, which in case of a malignant growth you otherwise would have to advise.

You may wonder how the collateral circulation is continued in a case of that kind. There are more vessels left than I like to see. Two will occur to you right away. After you cut out the entire external carotid, the infraorbital artery will carry it down into all the ramifications of the face; and this artery communicates freely in the orbit with branches from the deep carotid. Then there is the occipital artery, anastomosing by its princeps cervices branch with the profunda cervices. Here are two chief arteries, not to mention the minor ones. If there were a tendency to continue growing I would cut down and tie the infraorbital and the occipital.

(Showing specimen.) This is the upper jaw of a young man who was sent to me in 1896. Here is a tumor which has completely filled the antrum. I have removed part of the antral walls, so you can see how completely it fills it. When this case came to Dr. J. M. Howe there was a history that for four or five months there was a vague discomfort. When he examined it there was nothing to be seen except a little swelling of the roof of the mouth. More on suspicion than anything else he thought he would send it to me. I found the bony region, instead of being dense, could be penetrated by a pin or an ordinary sewing needle. Here in the roof of the mouth, where the bone is normally dense, I can, you see, shove a pin right in up to the head without any trouble, and in the same way above the alveolar process. If I had seen it two months earlier I would not have been able to do it so readily. If you can introduce the point of a pin so it will stick in the bone, you may be sure the

decalcifying process has begun and it is well to be on the lookout. I not only removed this upper jaw, but, as the prognosis is so very certain of its coming back, I cut out both carotids. Dr. Howe subsequently sent patient to Dr. Bishop, who made a half-set of teeth and a plumper for the cheek, and he has practically nothing to show for his condition except two delicate lines, one on either side of the neck. You can hardly notice the scar on his face.

I have recently shown to various societies specimens indicating the extreme importance of referring to some surgeon or pathologist suspicious cases. If in your patient you see a leucoplakia lingualis, or buccalis—the "wash-leather" appearance which in twenty-five cases out of one hundred results in epithelioma—or an epulis, or even a small tumor or an ulcer of the tongue, you should advise him to go to a surgeon as early as possible, because then an immense amount of good can be done, but later on perhaps almost nothing.

I now show you this specimen of a normal upper jaw so sawn that you may look into the antrum from its outside as through a window. Observe that the tiny natural opening is at the juncture of the roof and inner wall, consequently in antrum empyema we have to attack a much lower point in order to get drainage by gravity. The best way is, however, not the old-fashioned one of pulling out a tooth, but instead going in through the bottom of the antrum at the point where its bony wall is thinnest, i. e., at the region just above the first molar or second bicuspid. The best way to drain, if a tube is to be used, is to turn inside out for the smallest possible distance a soft rubber tube of such size as just to fit the opening you have made. This short collar upon the tubing may be retained in that shape by a stitch. The collar prevents the entire tube slipping in too far, and the lip will prevent it from coming out into the mouth.

Dr. LeRoy asks about the operation of entering the glottis, or the windpipe, for relief from particles of food having lodged there, causing stoppage of the passage so that the patient choked to death. Here is the "Adam's apple," or thyroid cartilage prominence, and we can all note upon our own persons that one inch lower is a small depression capable of admitting the finger tip. It is in this depression that we make our quick cut, passing at once through the cricothyroid membrane and into the air space, well below the glott-

tis, in which is caught the obstruction—a thing that every doctor, whether he be a dentist or other specialist, should feel capable of doing to give relief if any person is in his presence threatened with death from food or other foreign body in the larynx. Every year there are numerous deaths, in the aggregate, from this reason. If that happens in the presence of a doctor it is a lasting disgrace. With a penknife and by a single cut relief can be obtained. Having entered, turn the knife at right angles, and the patient can get a long breath; then, holding the finger over the wound, the patient can cough up the obstruction.

Tracheotomy is performed where you have comparative leisure, but laryngotomy where air must be obtained on the instant. Pack a bit of clean handkerchief in the wound to stop oozing, and when the patient gets home you soak some gauze with antiseptic solution and pack it in two or three hours to sterilize the cut, because the wound was made with a penknife and may otherwise become septic; subsequently suture both the divided cricothyroid membrane and the skin.

(In reply to a question.) You can make a diagnosis of a tumor or of pus in the antrum by use of a little electric light. You put it in the mouth in a dark room; it will shine right through the roof of the mouth, and the resulting appearance of the face reminds one of the pumpkin lantern of childhood. Normally the light passes through both antra, and then the bone and flesh in front, thus producing two large, roughly triangular bright areas, one beneath each orbit. But if one antrum contains a solid growth or a turbid fluid, that side of the face remains dark. In this operation you cannot make a mistake as to finding the lowest point if you go in at any point back of the cuspid teeth, but the nearer the first molar the better as a rule.

I pack in at the time of the operation a long strip of gauze rubbed with aristol. It is one of the best means of checking bleeding of the small vessels. I do not want to spend fifteen or twenty minutes stopping the oozing from the antrum. I leave this gauze in twenty-four hours. There may be a large blood-clot filling the cavity if you do not do that. If you find bare bone (and these are often tubercular cases) you must scrape, and then use dry gauze packing. The aristol gauze is the best in that case. If it is suppurative, but not a tubercular case, I select either daily douching (and use of a

short rubber drainage tube) or else a dry gauze packing, changed every other day. The patient soon learns to wash it out for himself with a fountain syringe, but he can less easily do effective gauze packing.—*Cosmos, Aug. 1900.*

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FRACTURE OF THE SUPERIOR MAXILLA IN A MAN 70 YEARS OLD WITH RECOVERY. By Vida A. Latham, D.D.S., Rogers Park, Ill. Read before American Medical Association, June 5-8, 1900. It may be asked: Is the dental surgeon, unless possessing a medical and dental qualification, capable of taking entire charge of these cases, especially as the injury is usually severe and may have complications, as shock, hemorrhage, meningitis and septicemia? The position of a dentist has recently been decided in at least one of the states by the courts. The court maintained that by using the

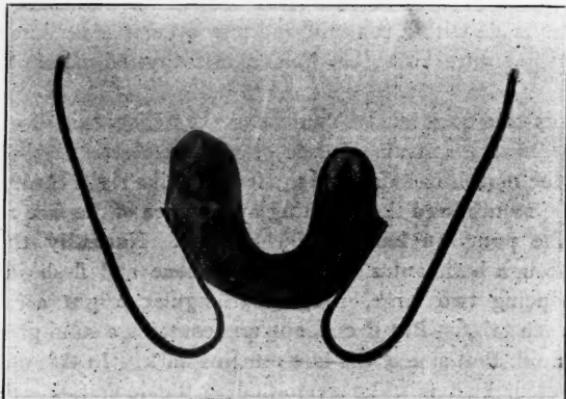


FIG. 1.—Lower Surface of Splint for Mandible to Fit In and Holes to Wash Through.

title "dental surgeon" or "dentist," he has the right to treat such cases without fear of being judged unqualified or incompetent. By some the question of not treating the case in consultation with a dentist and surgeon would be considered wrong. It may be asked if our dental schools are wise in not requiring a better course in oral surgery, with operative demonstrations on cadavers, etc., and at least giving a good training, so that a qualified dentist would be able to treat intelligently the usual class of cases belonging to the

head and neck, and not consider a "tooth" the only occupant of a patient's head.

The literature is meager on the subject of fractures of the superior maxilla. Is it from the rarity of such injuries? Possibly not, for in looking over the reports and bibliography, I soon came to the conclusion that more cases might be found if considerable time could be given, for the classification is so mixed as to make it nearly impossible to avail oneself of those reported. I will here give a brief summary of one of the reported cases, to show some of the difficulties in treating it:

J. W., aged 38, injured by the bursting of an emery-wheel. Fractures of left malar, nose, and four distinct comminuted fractures of the superior maxilla, two transverse, one in the middle line of mouth, and separation of nearly all of the alveoli containing the teeth and a depression of the same of about $\frac{1}{2}$ inch. Seen in a semi-comatose state, in which he remained for hours. Hemorrhage free and shock. On third day a vulcanite splint was attempted after the manner of the Gunning pattern, patient being etherized for the purpose. The plate had to be removed, as the fragments would not stay well in position at the end of the week. After consideration, ether was again given on the tenth day and the bones drilled, silver wire being used to coaptate the bones; a roller bandage and chin support were used. Liquid was given through a tube, and the mouth was washed twice a day with listerin. The wires were removed the fortieth day, the union being perfect. Patient talked and chewed fairly well, but the range of jaw motion was naturally lessened and there was loss of smell and taste.

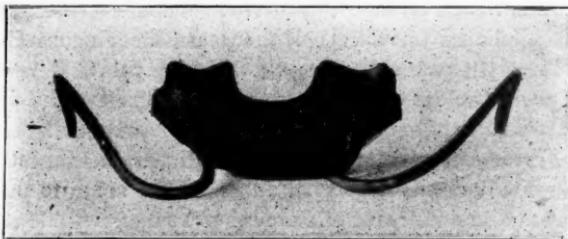


FIG. 2.—Anterior View and Upper Jaw Surface. Marshall Splint.

To the cases already reported I wish to add one recent one which came under my care during the past year: On Sept. 14, 1899, A. B., aged 71 years, a man of strong physique, good health and habits, received a fall of 25 feet while examining a building. He

was standing on a ladder which gave way and went to the ground under him. The patient fell forward, striking his face on one of the rounds of the ladder, nearly transversely at the level of the end of the nose, and also sustaining numerous bruises about the neck and shoulders and a sprain of the left wrist. He walked unaided into a house near by, and though considerably shocked was at no time unconscious. The immediate hemorrhage was very profuse from nose and mouth and continued about one hour. Dr. F. Keefer, who examined the face before much swelling had occurred, and Dr. Bertha E. Bush, of Chicago, found the upper alveolar margin and teeth freely movable en masse up and down as if upon a plate, though the mucous membrane of the mouth was intact except at the upper lip. The nasal and malar bones seemed uninjured and there was no orbital hemorrhage. The vomer, palate and inferior turbinated bones were comminuted, crepitus about the alæ and septum of the nose, resembling the "crackling feel of a broken eggshell." During the copious antiseptic irrigations of the nose and mouth, which were repeated every three or four hours in the first few days, the solution could be made to flow with some difficulty from either nostril into the mouth, but clots of blood and mucus, together with the extreme degrees of swelling which promptly ensued, effectually prevented nasal respiration. Deglutition and speech were difficult at first, but never quite impossible. The patient rallied somewhat slowly from the shock, and during the reaction developed a temperature of 101 F., which, however, subsided in less than a week. For twelve days after the accident no retentive appliance was adjusted, the treatment being directed solely to sustaining the patient's strength, relieving pain and keeping the injured parts as clean as possible by sprays, douches and gargles of antiseptic solutions and by wet compresses, principally borolyptol compounds and boracic acid. By this time swelling had much diminished, there was only a slight oozing of blood into the nose and pharynx, and a degree of hardening was perceptible about the floor and walls of the nares and the roof of the mouth. The soft parts were in good condition and no necrosis of bone had occurred. The mouth was habitually open for respiration, although the patient could at times breathe through his left nostril with effort. The face was markedly lengthened in the region of the injury, that is, the nose appeared longer than normal and a little flattened, and the

distance from the angles of the mouth to the eyes greater than before. The upper lip was longer (vertically), especially when the mouth was closed. The upper incisors dropped behind the lower on closing the jaws, a condition not usual to the patient previously.

None of the teeth had been loosened within the alveoli, but the entire row of upper teeth with the anterior portions of the superior maxilla moved freely up and down more than a quarter of an inch, a little lateral movement being also apparent. Pressure on either side of the nose beneath the orbits during the vertical and lateral movements of the upper jaw showed motion of the bony parts at those points, proving that the fracture of the superior maxilla had

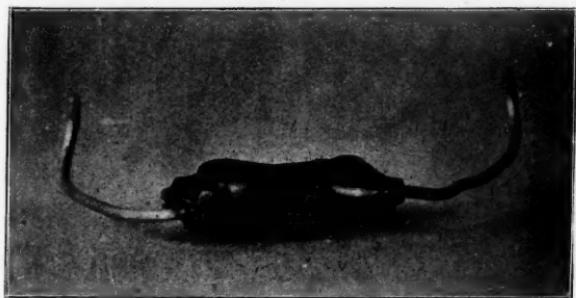


FIG. 3.—Marshall Splint. Anterior View. Slides for Wires.

been far above the alveolar border; that separation from some of their upper articulations was probable. Ten days after the receipt of the injury the patient was brought, by my advice, to Chicago, a distance of 100 miles. He was seen, in consultation with us, by Dr. John S. Marshall, who directed the further treatment. It appeared certain that bony union of the fractured maxilla could not take place unless the fragments were held continuously in position, the anterior separation being fully a quarter of an inch when the mouth was open. Support was not to be derived from any splint or bandage under the lower jaw, owing to the obstructed respiration when the mouth was closed. It was therefore determined to retain the loosened fragment in position by an interdental splint supported from the vertex, after the method described by Dr. J. S. Marshall, in his work on "Injuries and Surgical Diseases of the Face, Mouth and Jaws." On Sept. 24, 1899, the models were taken in modeling

compound, and the following day a rubber plate was made to fit over the upper teeth, with spaces into which the lower teeth might close accurately. On either side of the plate a grooved piece of metal was imbedded and into each groove a wire spring was slid from before backward, the wire being bent on itself so that its shorter end occupied the groove in the plate and the longer end extended back four or five inches with its tips bent down. These two wires were easily slipped into place, after the plate was adjusted in the mouth, the wires passing out of the mouth opposite the cuspid



FIG. 4.—Fracture of Superior Maxilla and Vomer Bone, etc.
Marshall Splint.

teeth. A cap of netting and leather was made, with properly placed loops and buckles for adjusting the straps fastened to the wire springs. (Figs. 1 and 3.) The apparatus was applied Sept. 26, on the twelfth day after the accident, and was worn day and night for three weeks, after which it was removed at night and worn in the daytime for another week (Fig. 4). On removal of the support union was found to be firm with only slight deformity—a lengthening of the middle portion of face. The patient could eat solid food, breathe with the mouth closed, and complained of no pain except a numbness of the roof of the mouth and slight impairment of the senses of smell and taste—which is still present, eight months later. He gained in weight and strength and was able to work.

There are certain points in this case which are of interest to the general as well as to the dental-surgeon: 1. The disadvantage of trying to use bandages, occipitofrontal and occipitomental, and the discomfort of a chin bandage. 2. The difficulty of respiration and danger of malocclusion, which latter must never be lost sight of and every effort be made to secure perfect or as nearly perfect occlusion as possible. 3. The lack of perfect support to the jaw if wired only, and the need in many instances of an anesthetic for the same. 4. The guide which the interdental splint gives to the mandible for correct occlusion, and hence chance to note any dropping or dis-

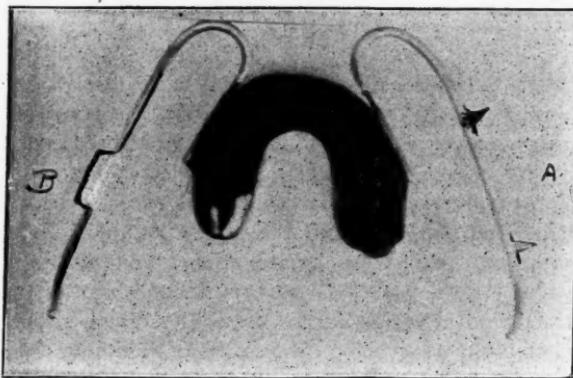


FIG. 5.—A.—Diagram of Points to Prevent Tapes Slipping.
B.—Diagram of Bend.

placement of the splint. 5. The disadvantages of the plate are so few that they may be easily remedied, on account of its adaptability, and they differ with the patient's disposition, a, the feeling of tightness around the head, which may give headache if not adjusted; b, the slipping of the side tapes until the balancing point is found can be remedied by making a downward curve (Fig. 5), bend or points in the wire, as seen in the diagrams. 6. The cap must be a good and accurate fit, the vertex leather not coming too low down to the ears. 7. The advantages of lightness, air through the mesh over the hair, use of non-corroding metal for the bars and sockets, or nickel-plating, the ease with which the plate may be slipped out and cleaned while the douching and irrigation is being

done. 8. The advantage of drilling several holes in the sides and through the alveolar part of the plate so that syringing with water and antiseptics can be done, when the plate is put in, to get rid of particles of food. 9. The greater variety of solid food that the patient can eat, as it can be crushed by the tongue against the plate. 10. The bilateral, almost symmetric injury, giving no point of support within the oral cavity, yet resulting in very slight alteration of the face after recovery. 11. This form of splint, a modification of Kingsley's, has this advantage over others, it can be vulcanized in an ordinary flask and the metal bars slipped in after plate is polished. 12. Lastly the age of the man, being the oldest recorded case of recovery.—*Jour. Am. Med. Assn.*, Sept. 1, 1900.

* * *

ACTINOMYCOSIS ABOUT THE MOUTH. By C. A. Porter, M.D., Boston. Read before the American Academy of Dental Science, May, 1900. Though actinomycosis has been considered a relatively rare disease, it seems more probable that it is one which is very commonly overlooked. In its clinical aspects there is little that is characteristic. Though the course of the infection may make the surgeon suspicious, examination by microscope and culture is essential for a positive diagnosis. The object of this paper is to attract your attention to the possibility that a proportion of the cases ranking as alveolar abscesses may be due to this specific organism. Statistics of the relative frequency of this disease are really of little value. In 1892 Illich of Vienna gathered only forty-two cases in man from all that at that time were reported. Dr. Rührrah of Baltimore has collected all the American cases, seventy-two in number, occurring in all parts of the body. During eighteen months' work in the hospital I have found eight cases of actinomycosis in about sixty so-called alveolar abscesses examined, and four cases have been found by other surgeons. Six cases of mine have occurred within three months, and four within one week; so we may conclude that the disease can not be one of great rarity.

I will pass about some photographs of cases, as well as a painting of the pus from the abscesses, which shows very well the gray or grayish-yellow granules which may be found in typical cases.

1. W. C., aged forty-five. Two months ago stuck a toothpick under his tongue and could not remove the whole of it. One week after this the submaxillary region began to swell. The swelling

was varied in amount; no pain; tenderness slight; no interference with talking, eating or swallowing. In the submaxillary region on the left side was an indefinite swelling about the size of a lemon; the skin somewhat edematous; at the bottom of the swelling was a small area where fluctuation could be made out; the skin over this slightly reddened. There were no glands in the neck. Under cocaine a small incision was made. Sero-pus escaped, with a few grayish granules, which proved to be actinomycetes. On the following day a more extensive operation was done under ether. Incisions were made about the involved skin, and the whole submaxillary region thoroughly cleaned from below upward. The submaxillary and a few lymphatic glands were removed with the mass. Just under the jaw a dense fibrous cord was found, extending upward to the floor of the mouth. Within this connective-tissue tube lay the remains of the toothpick lost two months before. This was removed, the flaps loosely sutured, and an iodoform wick placed to the top of the wound. Under daily packings and iodin the wound healed solidly in five weeks, without evidence of recurrence. This case shows well the common connection of actinomycosis with some foreign body.

2. F. L., aged sixteen, presented Nov. 9, 1899. Teeth have always been bad; has had five removed from upper jaw. Second left molar decayed for some time; two months ago a small lump appeared inside mouth about root of this tooth; this gradually grew in size, without pain, and appeared on the outside of the jaw ten days ago as a reddened semi-fluctuant swelling the size of a quarter, surrounded by a hard and firm border. Inside the mouth a distinct induration could be detected, as of a connective-tissue sinus leading from tooth to external swelling. There was moderate trismus; no pain; tenderness slight; no glandular enlargement. A small incision revealed several granules of actinomycosis. Under ether the edges of this wound were excised and the walls of the cavity cut away with scissors; the base thoroughly curetted and painted with iodin. No sinus could be found connecting with the tooth. The wound granulated slowly, but was healed by Dec. 7, when there appeared on the outer side of the scar a small fluctuating area. This was opened and curetted; in the pus no colonies could be found after very careful search. Dec. 20 the induration within the mouth still persisted, but by Jan. 2 this too had disappeared, and there was

then no sign of recurrence. At operation many granules were obtained which varied in size from a pin-head to three times as large. There was considerable soft, cheesy-looking material in the wall of the cavity. Pure cultures from this case were finally obtained.

3. W. W., aged thirty, presented Nov. 13, 1899. Five months ago noticed lump inside mouth opposite last molar teeth on right. This grew larger, and becoming very painful, he went to hospital, where it was lanced, with immediate relief. In another month abscess re-formed and face swelled to the eye. After lancing no further trouble until three weeks ago, when he noticed "pimple" on outside of jaw about the middle of horizontal ramus; this grew larger, with much swelling and pain. On entrance the whole right side of the face and eye were much swollen; trismus was well marked; over the center of the jaw was a reddened, fluctuating lump the size of a walnut. The surrounding tissues were hard and brawny. This induration ended very abruptly and gave place to general edema; within the mouth was well marked induration from first to third molar.

Under cocaine the external abscess was opened and a hundred or more granules poured out, in thin sero-pus. Some of these were unusually large, almost the size of a small split pea. Under ether the infected skin was freely removed, with the base of the cavity down to sound muscular tissue. Again no sinus connecting with the teeth could be found. Closer to the jaw was a small cavity containing thick, yellow, stinking pus. The wound was dressed as before. Within three days the swelling had greatly diminished and the trismus was much less.

Dec. 10, almost a month after operation, the face suddenly began to swell again. Under ether an abscess to the outer side of the upper jaw was evacuated within the mouth; the pus was foul and contained many soft, yellow granules, appearing somewhat like actinomycosis, but under the microscope proved to be masses of mouth-bacteria and leptothrix buccalis. Just back of scar of first operation a "crater" was found, which when opened allowed the little finger to enter nearly to lower jaw outside of the last molar; the sinus was lined with very dense connective tissue and contained foul pus. Here one or two disorganized colonies of actinomycosis were found. In three weeks the swelling and most of the induration had gone; the sinus was healed, and the patient in much better

condition. March 20 showed no sign of recurrence; no induration; mouth opened normally; some exuberant gum about third molar. In this case the focus of disease was probably not reached until the last operation, and mixed infection undoubtedly played an important rôle. Pure cultures were finally obtained from the granules in spite of contamination.

4. J. S., six months ago broke left lower jaw just anterior to masseter muscle. The bone healed, but whenever he got drunk had soreness and swelling at point of fracture. Once a little pus was discharged into his mouth. He came to hospital with a small fluctuating abscess just under the skin. On opening this the typical granules were found. The abscess cavity was thoroughly excised; no bare bone was found. In two weeks the wound was healed. There has been no recurrence. The natural diagnosis was necrosis after fracture; yet no dead bone was found, and thorough excision stopped spread of disease.

5. P. S., aged forty. For two years has had trouble with left molar teeth, which are carious. Has had several small abscesses opened inside the mouth. In January left side of face swelled and large abscess was evacuated. Since then there has been intermittent purulent discharge into the mouth and jaw has been sore. Patient entered on April 15. The left side of face was much swollen; he could hardly open the mouth; in front of the masseter muscle, over the horizontal ramus of the jaw, was a reddened fluctuating abscess the size of a walnut. This was opened and found to contain the granules. Under ether the abscess cavity was dissected out, and a sinus found leading back to the second molar; here a small piece of dead bone was found. The sinus passed between the jaw and the masseter muscle, which was also involved in the disease. The whole cavity was thoroughly curetted and cauterized, the bad tooth extracted. In ten days the patient had only a small sinus left, which was granulating in a healthy manner. This case is a good example of the recurrent abscesses which occur until the disease has been thoroughly removed.

The infection seems to enter most frequently near the carious tooth, or is carried in by a foreign body through the mucous membrane of the mouth or pharynx. The process is essentially subacute or chronic, and the disease tends to advance by a sinus towards the skin. Infection is rarely pure, but is usually mixed

with ordinary pyogenic organisms or mouth-bacteria. It is rarely painful, and the accompanying pain, when it occurs, is due, I think, to the mixed infection. Clinically and under the microscope the disease is characterized by the formation of an unusual amount of dense connective tissue, which ends more or less abruptly at the periphery and infiltrates the adjacent muscle or fat. In the jaw the bone itself is rarely involved in human actinomycosis, though it may be thickened from periostitis.

It would seem that this surrounding connective tissue could later become infiltrated by the growth of the streptothrix and break down. In all the cases I have examined the inner wall of the cavity shows a clearly cut line of demarcation between the connective-tissue wall and the lining flabby, soft, grayish-red, granulating tissue. Glandular enlargement is conspicuous by its absence, and when present seems to be due to mixed infection. Metastasis seems to occur through the blood-current and not by way of the lymphatics. In serious cases the disease may progress down the neck, into the antrum or through base of skull.

Though a definite connection cannot be always demonstrated, it would seem that a sinus at one time leads from the original site to the superficial abscess. In one case at the last operation such a sinus was found leading directly to the carious tooth.

Trismus, though often present, is no more characteristic of this disease than of other inflammatory affections, though if the masseter were involved in the dense connective tissue, the jaw would probably remain stiff for a long time.

It is rarely possible, I think, to make a clinical diagnosis of actinomycosis—recurrent abscesses, without necrosis; chronic, painless, subcutaneous abscesses about the jaw, evidently not connected with tubercular glands, would lead to a suspicion of this disease. If these fluctuating areas were surrounded by especially firm and hard connective tissue, and a sinus could be felt under the skin, if there was little edema and swelling, perhaps a probable diagnosis could be made.

Examination of the discharge is of great assistance, but the mere presence of the so-called "sulphur granules" is not by any means conclusive, and no case should be considered as one of actinomycosis without competent microscopic examination. Small round masses of fibrin or tubercular *débris* sometimes simulate a colony in the

mouth or adjacent regions. Round masses of *leptothrix buccalis* occasionally appear very like a true colony. Even under low powers the resemblance is very similar. One of these masses presents a radiating arrangement, but under a higher power is seen to consist of vast masses of bacilli and the large, thick, non-branching filaments of the *leptothrix buccalis*.

In examining for actinomycosis gauze sponges which absorb the discharge should not be used. All bleeding, when possible, should be stopped before opening the abscess-wall. Unless badly contaminated actinomycosis pus appears usually as a clear, perhaps blood-tinged, slightly syrupy, sero-pus. Placed on a cover-glass, the granules vary in size from a millet-seed to the head of a large pin. They are usually round, with a clear-cut periphery; the color is gray or grayish-yellow, often suggesting a small pearl; the center is not rarely somewhat darker. The surrounding pus is non-adherent and the granules can be readily removed alone. Fluid should be examined *at once*, for these granules are found with great difficulty when the blood has once clotted.

With reference to treatment, two facts speak strongly for the self-limitation of the disease in the majority of cases. 1. Though it can not be a rare affection, few cases enter the hospital with advanced actinomycosis of the jaw, and it seems therefore certain that many recover after simple incision of the abscess, and even through a natural rupture of it. 2. It is surprising to find on microscopic examination of sections how infrequently the colonies are found in the walls of the abscesses, though the pus contained many granules. The surrounding connective tissue probably proves an effective barrier to the spread of the disease.

Simple opening, curetting, and drainage have proved efficient in many cases; though recurrences may be frequent, healing eventually takes place. Where possible, excision of the inner half of the abscess-wall or sinus is the best treatment. The danger from swallowing the granules, where the discharge empties into the mouth, is hard to estimate. Certain cases of generalized disease in the lungs, intestinal tract, liver, etc., occurred in which the organism gained entrance through the food or was swallowed, and therefore the surgeon should aim at making *external* drainage. This question is often a difficult one to decide. On the one hand, he wishes to avoid a scar on the face, especially in women; on the other, he

wishes thoroughly to eradicate the disease; for with recurrence the scars would probably be worse than from a single thorough and clean operation. The individual case and the severity of the infection must determine the choice between curetting and cauterizing the cavity with tincture of iodin or carbolic acid and a more radical excision. Iodid of potash, in doses of twenty grains three or four times a day, has distinctly influenced some cases for good, and should be used in connection with the local treatment.

I trust that when your attention has once been called to actinomycosis of the jaw you will be enabled to make an early diagnosis of the disease, and I feel sure a careful examination of chronic alveolar abscesses will show that the streptothrix actinomycotica is the cause of perhaps one-eighth of them.—*International, Aug. 1900.*

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FETOR FROM A DENTAL STANDPOINT. By B. Holly Smith, D.D.S., Baltimore. Read before Academy of Stomatolgy, March, 1900. The olfactory may be regarded as one of the so-called *artistic* senses, and is capable of training and education. People of refinement in all ages have striven to avoid offending it, and not infrequently efforts are made to contribute to the pleasure of the individual through this sense. The delicate perfume of the flower appeals as much to the artistic sense through the olfactories as the coloring of the gracefully moulded petals do through the optics. Persons of refinement and culture, of beauty, grace and good taste, should spread around them everywhere pleasurable impressions. How often do we see these charms negated, and social intercourse become burdensome because of a fetid breath.

The treatment of fetor as the subject of a paper may not find favor in the eyes of those who recognize it only as a symptom of some disease and never as a special condition, the amelioration of which requires special care and treatment aside from that prescribed for the many conditions which have it for a symptom. To these let me say that I have selected the subject partly because of the existence of fetor as a special factor in a number of cases of no little interest to me, partly because I think the dentist above any other specialist contributes to the amelioration of this condition, and more than all because I want to establish the contention that the patient must look to the dentist and make him responsible for such relief.

Even though the fetor has nothing to do with the mouth or the

area usually included in the dentist's field of work, in the close contact which this specialist sustains to his patient he must be able to recognize its existence and should suggest the propriety of seeking treatment for conditions which the patient seems disposed to neglect. It must be conceded that while other specialists often direct their attentions to the amelioration of conditions giving rise to fetor, the dentist is the specialist most likely to detect its existence; and it appears to me to be his plain duty to determine its cause; if he can do so, to remove it, if not, he should direct his patient to the specialist best fitted to do so.

Fetor may be said to indicate always a departure from the normal, though its presence is not in every case coexistent with illness of a serious nature. Many persons seem oblivious to it, and medical attention is not always sought even when it is recognized. A mistaken sense of refinement often causes members of a family to conceal their knowledge of its existence from the sufferer, and when the patient becomes aware of it he is ignorant of its cause.

Among the conditions in which fetor plays an important part in determining the presence and progress of disease we may mention bromin, iodin, mercurial lead and phosphorus poisonings; caries of the teeth; loose or badly constructed bridges and crown-work; unsanitary plates and appliances; alveolar abscess, pyorrhea alveolaris; carious inflammations, specific and non-specific, of the mouth and appendages; fevers, constipation, diarrhea; in fact, any departure from normal health and tone.

The mouth is lined by pavement epithelium, which is embryologically of the same origin as the epidermis of the skin, and therefore does not belong to the mucous membrane in the same sense as the lining of the stomach, bronchi, etc. There are numerous mucous glands in the mouth which open on the inner surface of cheeks, lips, and on the surface or beneath the tongue. The excretion of these is added to that of the salivary glands to make the complete fluid of the mouth. Many substances, both mineral and alkaloidal, which are absorbed into the circulation are eliminated by these glands as well as by the salivary, and in being secreted have their influence on the mucous membrane of the mouth. It is a well-known fact that mercury, after it has gotten into the circulation either through absorption by the skin from inunction or by hypodermic injection, is excreted by the mouth, and may give rise to a

stomatitis just as severe as if an irritant were applied to the mucous membrane of the mouth. This is in accordance with the well-known law that substances which are secreted or excreted by mucous membranes act on those mucous membranes.

We notice that these drugs generally cause death to the superficial layers of epithelia, and of course dead epithelium is at once attacked by the saprophytic bacteria of the mouth, notably the *staphylococcus pyogenes fetida*. Miller has shown that these dead epithelia and thickened mucous secretions scraped from a furred tongue show the presence of many rapidly-developing organisms. It is only, however, when these organisms act on the dead epithelia and secretions in some little pocket, such as those around the teeth, in the valleculæ of the circumvallate papillæ, or in the crypts in and around the lingual and pharyngeal tonsil, where the air has not free access, that odor occurs.

We find much the same phenomena occurring after the administration of some of the vegetable alkaloids, which are eliminated by the mouth. Atropin checks the secretions of the mouth, and if pushed is followed by furred tongue, etc. Other alkaloids also are excreted by the glands of the mouth, and in passing out act on the mucous membrane.

Now, I have no doubt that a similar explanation may be given for the furred tongue and bad breath occurring in many constitutional diseases, such as the fevers, etc. Modern investigation has shown that in the course of these diseases there are developed substances (generally the product of pathogenic organisms) called toxins, which are nitrogen compounds resembling in chemical construction and often in action many of the vegetable alkaloids; the greatest difference being that they are derived from animal instead of vegetable tissues. It seems to me much more logical to refer the furred tongue to the superficial necrosing effect of these toxins during their secretion by the mucous membrane of the mouth than to say it is in sympathy with the other organs of the body, stomach, etc. I do not believe it is a spreading of the condition of the stomach up the long esophagus to the mouth so much as a simultaneous affecting of both by toxins secreted from the blood by the glands and epithelia of both.

Again, the furred tongue of constipation should be explained in a similar way. It is only one of the many evidences which the

body shows of fecal poisoning, making its appearance here much sooner than in other portions of the body. It is not necessary to go into the subject of fecal poisoning to discuss what substances are absorbed from decomposing feces blocked up in the bowels. Chemistry of the animal products, or physiological chemistry, as it has been termed, which has been developed so much lately since Vaughn extracted his tyrotoxicon from milk and cheese, has shown us that many of the phenomena of disease are to be traced to these products of animal matter, namely, toxins in living bodies and ptomaines in dead.

Normal feces contain, besides the residuum of digestion, substances which are excreted, or not intended for use in the economy, but are rather products which are deleterious, such as those in the bile, etc. Now, when the feces do not pass out in a reasonable time, we have in addition the products of putrefaction, which are even more deleterious. These are absorbed into the blood and carried all over the body, and the mucous membrane of the mouth in eliminating them is affected thereby.

Now, what is the cause of the odor imparted to the breath? These cases of furred tongue in fevers, fecal poisoning, etc. We cannot suppose that such substances may be excreted by the mucous membrane of the mouth without causing a mild degree of stomatitis. Many of the epithelial cells become opaque and lose their vitality, the secretions of the glands are modified, and these conditions afford dead material, which the saprophytes always present in the mouth develop. Whenever there is a space where these grow and the air does not get free access, as in the valleculæ at base of tongue, the pockets between gums and teeth, or even where the dead epithelia is so thick as to exclude air from the lower layers, gases may develop and impart an odor to the breath.

Not infrequently the adenoid tissue known as the lingual tonsil is the seat of cheesy deposit or abscess, which gives rise to fetor. The thick, ropy secretions which are often stagnant behind the folds of the velum palati, between the tonsils, or about the uvula, are often fetid. In the act of sneezing these are brought in the mouth, when the fetor is readily discovered. When the teeth are being cleaned with the brush, if the bristles be pressed far back on the tongue and palate, these secretions will be dislodged by gagging. Patients should be instructed to cleanse the mouth and appendages.

Following are some cases which might assist in applying the teaching of this paper: Miss M., cashier in a toy-store, had been in bad health for several months; trouble began with what was pronounced la grippe by the homeopathic physician under whose care she remained. After much suffering and intermittent employment the patient sought dental services for the relief of an aching tooth. On account of pronounced fetor a careful examination was made, suppurating antrum discovered, successfully treated, and patient restored to health. But for the fetor the antral suppuration would not have been discovered and prompt relief afforded.

Miss B., under my care, was a very handsome and vivacious young woman. In spite of the fact that her teeth were in good condition and the mucous membrane had a healthy appearance, her breath had a fetid odor. I called her attention to it so that we might cooperate in finding the cause. A superficial examination of the nasal cavities was made without discovering any cause for the fetor, and the throat seemed normal. She was habitually constipated, so means were suggested for the relief of this condition, and she was requested to call in about two weeks. Upon returning she reported improvement in habit, but there was the same close fetid taint to the breath. In a more careful examination of the throat and tongue I noticed that the circumvallate papillæ on the dorsum lingualis were very prominent and a spoon-shaped spatula scraped over this part of the tongue collected mucous of a most fetid character. With a delicate bistoury I cut through one of these papillæ, and found by the side of it an accumulated mass of very fetid matter. These fungiform papillæ were obliterated with electric cautery, which gave absolute relief of the condition.

A case in the practice of the late Prof. Winder: Mrs. L., a lady of position and wealth, had been under the care of a throat specialist for six months, being treated for catarrh of the Schneiderian membrane, with little improvement. She was obliged on account of extreme fetor to forego social pleasures; conscious of the infirmity, she apologized profusely for having to subject her dentist and friend to the ordeal of attending to her teeth. A careful examination revealed a pulpless bicuspid slightly tender to percussion. Its extraction was consented to; a diseased antral cavity was found and restored to health; the patient, from being a recluse and invalid, resumed her position of prominence in her family and social circle.

The fetor attending fractures is in proportion generally to the comminution; where spiculae or fragments are broken away these frequently necrose, and quite a characteristic odor is developed. Added to this a fetor from accumulated *débris* about the splint is to be combated. A fetid odor is often imparted to the breath from the socket where a tooth has been extracted recently. A partially erupted third molar about the crown of which the gum is swollen gives a like odor.

I had a patient call for examination whose breath was most fetid. He apologized for it on the ground that his stomach had been out of order. I soon discovered a loose bridge to be the cause of the fetor, but being interested in his diagnosis, I asked him how long he had been suffering. He said that about a month before he had noticed the bad odor upon arising in the morning. His doctor, upon examination of his tongue, said he would require some purgative medicine, which was taken with abundant effect but very little benefit. Since that he had been undergoing a regular course of medicine for indigestion, with not much improvement. He was restored completely by a resetting of the bridge.

On several occasions I have had occasion to warn patients of mercurial salivation, the presence of which I was led to determine by the peculiar fetor associated with this condition.

Your essayist has found permanganate of potash a rock of defence against fetor in all conditions, using it in weak solution, say one grain to the ounce, often having it decolorized by injecting it into suppurating cavities.—*International, Aug. 1900.*

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COCAIN AND ITS RATIONAL ANTIDOTE. By G. Lenox Curtis, M.D., New York. Read before Union Dental Meeting, Richmond, Va., May, 1900. In the majority of cases in which cocaine is used some excitement either pleasant or unpleasant is manifested. The pulse becomes rapid, the breathing quick and deep, followed by headache, dryness of the throat, pallor of the face, nausea and coldness of the extremities, accompanied by a tingling sensation; the skin becomes clammy, and often great beads of perspiration form; the eyes grow glassy and the pupils dilate. When a large amount of the drug has been ingested, convulsions, either tonic or clonic, may occur, or collapse may follow. Death is due to gradual cessation of respiration.

Cocain is a stimulant to the central nervous system. It increases cerebral activity and endurance of fatigue. For generations the natives of Peru and Bolivia ate cocoa leaves as a stimulant, and their soldiers were provided with them to chew when making forced marches. Scientific experiments prove that more work can be done after taking cocaine. The heart's action is accelerated by it, owing to the direction of the drug on the cardiac muscle and stimulation of the cardiac sympathetic.

Paralysis of the vagus, as in belladonna poisoning, cannot account for the increased activity, for stimulation of the vagus in a case of cocaine poisoning slows the heart, showing that the latter nerve has not been deprived of its function. At first, the blood-vessels are much contracted, which, with the rapid pulse rate, causes a marked rise in the blood pressure. The cause of the arterial contraction is stimulation of the vaso-motor center. Subsequently the blood pressure falls from peripheral vaso-motor paralysis.

The local effect of the drug is due to paralysis of the termini of some of the afferent nerves, particularly those conveying impressions of pain and touch, but the temperature sense does not seem to be affected. Cocaine acts best on mucous membranes. In the nose it paralyzes the sense of smell as well as sensation, but has very little effect, if any, on the healthy skin. Schleich's method of infiltration anesthesia is probably the most satisfactory. I have found that a weak solution of cocaine is especially applicable in work on the mucous membrane, but in operations on the deeper tissues, and in bone work, the stronger solution is more effective. I therefore use from a ten per cent to a saturated solution. The great advantage gained by employing solutions of high strength is economy of time in the operation, which is important. In from one to two minutes after injection the surgeon can proceed and operation be completed by the time a weaker solution would have taken effect. The most successful surgeons of to-day aim to consume the least possible time in operating, and thus lessen shock.

The opportunities for the use of cocaine are numerous. It is effective in major as well as in minor operations. If more operators would follow Schleich's example, much of the discomfort and danger of general anesthesia would be averted. I predict that the time will come when ether and chloroform will be held in reserve as emergency drugs, and that cocaine or some other local anesthetic will

supersede them. I am able to do fully ninety per cent of my work with cocaine. The principal objection to it is its toxic effect; if that can be overcome by an antidote, surgery will forge ahead and many major operations become minor ones.

Cushing says: "Cocaine is a protoplasmic poison. It destroys the protoplasm of nerve and organs, hence explains its local anesthetic action. When a solution of cocaine comes in contact with other organs it destroys their vitality. Ciliated epithelial cells, leucocytes and spermatozoa become motionless. Cortical nerve cells lose their excitability. Many of the invertebrates are killed by even a short exposure to cocaine. Movements of protoplasm in plants are also retarded or entirely suppressed by this poison." This doubtless accounts to a greater or less degree for the general languor that usually follows the use of cocaine. In continued daily operations where cocaine is employed, the strength and energy of the patient decline, and often a morbid condition exists.

A rational antidote cannot be expected to prevent protoplasmic poisoning or destruction. Operations are not usually done on the same patient every day, hence nature may be safely permitted to look out for local ill effects, which, to say the least, are never serious. A successful antidote must antagonize the paralyzant effect of cocaine upon the heart, the blood-vessels, respiration, etc. It should comprise in its physiological action the merits of digitalis or strophanthus, belladonna, ergot, calabar bean, etc. In its effect upon the circulation and respiration, volasem, which is an extract of violet, resembles the principal action of these drugs. Its effect is manifested so quickly and surely that with it any required strength and amount of cocaine can be safely used. Volasem neutralizes the general toxic effect of cocaine, but does not interfere with its local effect. It stimulates the heart's action and contracts the arterioles. It stimulates respiration and raises the blood pressure. When administered immediately before cocaine is employed it prevents the usual untoward symptoms by maintaining the respiratory and cardiac functions. I have found that where volasem was administered in five-drop doses every hour, until twelve doses had been taken, no appreciable action was observed; but when fifteen drops were given every half hour for two hours, its action upon the heart and lungs was similar to the primary effect of cocaine, but none of the other cocaine symptoms were observed. I have also noticed with sus-

ceptible patients that ten drops would produce similar results within a minute or two. These cases respond quickly to cardiac stimulants, and have none of the usual cocaine-after-effects. I found, however, that hypodermic injection of cocaine would immediately restore the equilibrium. Thus I am led to believe that these two drugs antidote each other.

To show the efficacy of volasem I will relate some clinical experiences. Mrs. A., aged forty, upon whom I had previously operated under cocaine, was to be operated upon again, this time for removal of a tumor. When ready, I discovered I had no volasem, but concluded to proceed under a four per cent solution of cocaine. I injected four drops and waited for its effect. In about two minutes the patient showed unmistakable toxic symptoms. Aromatic spirits of ammonia were quickly administered, and by the time her clothing was loosened alarming symptoms appeared. The patient being unconscious, hypodermic injections of digitalis, whisky and strychnin were given. Most of the extreme symptoms were manifested. Respirations had fallen to seven a minute; the radial and temporal pulse ceased, and the heart's action was scarcely perceptible. It required an hour's hard work to restore the patient, and it was several days before she was in a normal condition. Two weeks later I went on with the operation, and first giving five drops of volasem, and a minute later injecting thirty drops of a ten per cent solution of cocaine into and about the tumor, I completed the operation in twenty minutes, the patient showing not the slightest effect of the cocaine. She expressed her astonishment at the virtue of the antidote.

Another phase of the toxic of cocaine, and the quick action of volasem, was recorded in my discussion of Dr. Foster's paper on cocaine poisoning. The patient was brought to me by his dentist; and as the case was urgent, I concluded to operate with the doctor's assistance. I prepared the volasem, but forgot to give it, and injected half a dram of a saturated solution of cocaine. Within a few seconds the patient complained of a peculiar sensation pervading his entire body and a tingling in the extremities. He became unconscious and was soon fighting like a demon. It was with great effort we prevented his doing us bodily harm, when suddenly toxic convulsions occurred. I turned to give him more vosalem, when I discovered I had not given him any. Prying open his mouth I

poured the ten-drop dose down his throat. After the lapse of a minute the muscular rigidity relaxed, and within another minute restoration was complete. The patient stated he had no knowledge of what had happened. I finished the operation, and within an hour he went to his home, apparently none the worse for his experience.—*Dominion Jour.*, Sept. 1900.

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PRACTICAL POINTS. By J. B. Hodgkin, D.D.S. You wish to cut a block, as it is often the case that one tooth must be left off. Press a thick-bladed knife into the space between the teeth, and the block will usually split quite straight.

Alcohol used with a little cotton on an excavator will cleanse the pins about artificial teeth better than hot water, and should follow the water. It does not dissolve the wax, but separates it from the pin. It is quite surprising to see how one may get off little unnoticed bits of wax in this way after a very careful washing with water. If the water is poured on from a height it does better work.

Plaster is quickly dissolved in water, and a cast left in water a few days loses its fine lines. Indeed, every washing does something towards wearing away the cast.

Not every one seems to know that a flask can be packed and opened for inspection by placing a piece of rubber-dam over the model. I have heard dentists say that they always knew just how much rubber to put in, and had no occasion to cut vents. Not all are so clever, and to those it is a help, in cases of doubt, to be able to open the flask and see just what is there. If too much, a little can be cut away; if too little, add some. If the rubber-dam, after using, sticks to the packed-in rubber, wind a little cotton on an instrument, or take a small, clean paintbrush, and touch with gasolin the edges. It then separates readily.

A bit of cardboard makes as good a vacuum cavity as anything. If it refuses to stay in place, wet it and it can be molded to fit the curve of the model. If you are afraid it will slip, make a little pile of rubber just over the place where the cavity is and, in closing, the rubber will touch that point first and hold cavity-former in place.

Close rubber flasks in a disused celluloid apparatus, and with dry heat. The dry plaster is much stronger and not so likely to break as is that kept wet. Of course care must be taken not to overheat the rubber, but it is quite remarkable how much more easily a flask

closes dry than wet. Moreover, the joints are not likely to spread apart and thin sections are not liable to crack.

A little vaselin spread over the plaster makes a good parting medium, and washes off clean. Shellac sometimes gets on the teeth or about the pins if much boiling is done, and is troublesome to get off.

If heavy tinfoil is used in vulcanizing it can be polished nicely with a little absorbent cotton. If foil is used care must be taken not to touch it with the fingers after the final cleansing, and the rubber is best packed with something else than the bare fingers, as they leave a stain on the plate.

If tinfoil is used on the model, and it is a good plan to do this, do not put it on until the flask has been closed and reopened in the way described above. After all is ready to finally close, coat the model with shellac, and before this is quite dry carefully press down the light tinfoil with a lump of raw cotton, trying not to tear the tin. The kind of tin used for fillings—say number six—is best for this. You can not pull it off after the case is vulcanized, but by placing the plate in muriatic acid the tin is easily dissolved off, and the acid does not hurt the plate. A plate made between foil in this way is stronger, and the labor saved is great.

You may wish to reproduce on your vulcanite plate the rugae of the mouth. In that case take a good impression of the best mouth you can, one with the rugae well developed. Make a plaster cast of this and let it dry well. It will be better if this is made of coarse plaster as it is stronger. Dry the cast until it rings like a piece of metal. Cut a piece of the heavy tin foil about the size of the lingual part of your waxed-up plate, press this down on the rugae. A piece of sponge is good here—follow it into the rugae with a burnisher, turn it over, fill up the depressions on the convex side with hard wax, place this on the wax of the plate and carefully adjust it. When the piece is separated the reverse of the rugae will be seen in the tin, and when the plate is vulcanized you will have a rubber plate with rugae nicely brought out, and much better than any attempt at carving.

Sometimes, in spite of all care, we find a tooth a little loose on the plate, this especially with plain teeth, where the rubber has but little hold. When you pack the rubber cut a little black rubber, pack a bit of this between and around the pins, and it will prevent the

loose tooth business. It is better, too, as it is much stronger than any red rubber, and so the pins are less likely to break out of the plate. Barring the color, this rubber is so much stronger that it is a question if all plates should not be made of it.

You have mended a case, and are annoyed that the joints look dark and ugly. It is a stain that wears out after a while; but it disfigures the plate. Touch the dark places with a very little nitric acid. It dissolves off the stain. Wash off the acid, and you will be pleased with the result.

Mend your cases with a specially dark rubber. As the old rubber turns darker, even if light at first, the mend will look more like the original plate.

Rubber solder is always useful. You can make this with gasolin just as well as with more costly solvents, although I have seen chloroform recommended.

Very extensive breaks in plaster casts may be mended with cement. Mix it very thin and have the cast well dried. If wet it will not stick.

Many troublesome lower full cases can be helped greatly in their staying qualities by taking first as good an impression as may be, making a plaster cast of this, and a "special" tray of gutta-percha, carrying this far down into the space between the tongue and the jaw at the place formerly occupied by the molars. Make all this loose, and take a plaster impression, carrying it far down in this space. Extending the plate down at this point (a space at which no muscles are attached) prevents the lateral sliding. Some cases which I had almost despaired of have been greatly improved in this way.

Little things help. Cut the bibulous paper into little squares. Punch a hole through the corner of the square. Run a bit of wire through and give it a twist. Hang this at the back of the chair where your hand will reach it easily.

A uniform set of bottles for medicines looks nice, but I find that by having different-sized bottles, and some of different color, the eye-strain is greatly lessened. My alcohol—that which I use occasionally for washing out a cavity—I put in a little blue bottle which a glance at the cabinet shows, and I am not fatigued with looking over a dozen or more of the same-sized bottles for the one wanted. So with other drugs.

Bear in mind that shades of teeth look different in different lights. All will testify that the teeth sometimes selected at the dental depot seem vastly different when seen by the office light. Again, bear in mind that if you have had rubber-dam on a tooth and have just taken it off, that tooth is not available to match a crown by, as the color fades out by drying and comes back slowly.

Again, artificial teeth reflect light much more than natural ones, and this is to be considered. Especially by artificial light is this the case, and a set of teeth which may look fairly well by daylight will glitter horribly under gas. Polishing of the glossy enamel will help this. Some teeth, as the Dental Protective, can be ground away, and then polished with pumice and the glitter so taken off.

Keep at hand always a little crystal silver nitrat. Not the stick or pencil sort, but crystals, and touch those most sensitive places along the margins of the gums. It will do more good than anything I know of, and in many cases will stop the decay. I have a case in mind now of a gentleman, just recovered from typhoid, whose teeth were so sensitive as to be untouchable, all along the margins of the gums being almost incapable of being brushed. These were touched with silver nitrat, and although I fully expected to find cavities developing, yet they were as good as ever, saving a slight discoloration.

It may be that in New York and Boston teeth capped over for crowning with cement do not die, but down our way they have that trick. Even teeth which have been worn off, but with pulps in good condition, so far as one may judge, die with caps cemented over them. To remedy this, put on dam, paint over several coats of shellac. Silver nitrat will possibly do.

Again: Not every one knows that to paint shellac over a tooth on which you are to place a band, as in regulating cases, helps to hold the cement. Paint on varnish, wait till it dries, and then cement the band. It sticks like glue.

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OXYPHOSPHATE OF ZINC. By Sylvanus Davis, D.D.S. Paper and clinic before Colorado State Dental Association, June 13, 1900. It is easy to understand why there are so many different opinions about oxyphosphate of zinc; there being so many formulas, each may have its peculiarities, but just why so many report disastrous results is not so easily explained. Perhaps the veil would be

lifted if we could see how the combination between the liquid and powders is made, and what rules are observed in the insertion. These are important points.

In an effort to solve the problem, as to whether or not a phosphate filling acts injuriously upon living pulps, and in order to clear up some of the myths of dentistry, a query was sent out by Dr. Ottolengui to prominent men in the profession. Some twenty odd have replied, and taking these replies as a whole, the novice would naturally say that it is a good thing to avoid. The majority appeared to believe that the phosphoric acid perhaps was a disturbing agent, and this has led to the practice by many of interposing a protection between oxyphosphate and dentin.

The scarecrow, arsenious acid, has disturbed many, but that idea is pretty well exploded, and the man who advanced it without positive proof should have been sent to purgatory. It is an impossibility for oxid of zinc to contain arsenious acid after it has been calcined sufficiently for our purpose. Arsenious acid is vaporized at about 400° Fahrenheit, while to properly calcine oxid of zinc it should be kept for two hours or more at a heat of about 2200°. I have put arsenic in the zinc, then calcined, used Marsh test, and not a trace of arsenic could be found. It has been suggested that the heat generated during crystallization is a disturber; this is not likely, as it rises only a few degrees and lasts but a short time. Thermal shock has been mentioned; it is said, that it has been proven to be a conductor of electricity more than half as good as gold; gold at 1000, oxyphosphate 584. I will admit that it requires some temerity to take issue on this point, especially when the exact proportion of conductivity is given; nevertheless, I have given this a thorough test, and it proves to be as poor a conductor as tooth-bone or ivory for all practical purposes.

Many years of experience with oxychlorid of zinc and oxyphosphate prove that both are perfectly compatible with living tooth structure; both materials have their place. I give the preference to oxychlorid for filling pulp-chambers and capping pulps. Some of the phosphates contain for the powder, soda, borax, silica, glass, the base being oxid of zinc. Some of these ingredients are worse than useless. The liquid is phosphoric acid in some form. The difference between oxychlorid and oxyphosphate is in the liquid. The clinic I give you to-day will be with phosphate composed of

calcined oxid zinc and glacial phosphoric acid. It can be mixed so that it will have different degrees of acidity, or it may be alkaline or neutral. I wish to call your attention to this particular point, that there is no free acid at any time before crystallization or after (if properly mixed). In practice if you should wish some of the acid set free, it is easily done by leaving the cavity moist; this may be desirable to produce a vascular action. The secretions in some mouths appear to be much more destructive to the material than in others. I believe it is more in the combination and manipulation, the pressure used making the phosphate more dense, therefore offering greater resistance to secretions.

Admitting that a small quantity of phosphoric acid is set free by moisture, pressure or improper mixing, is it very destructive to pulp and tooth-tissue, as several of these writers state? A caustic burns or disorganizes animal substances. Dilute phosphoric acid although evaporated to greater density, is quoted in the U. S. Dispensatory as strongly acid but not corrosive as are other mineral acids. By placing it on my tongue or gums I get nothing more than an acid taste. While oxid of zinc can not, as stated above, contain arsenic, there is another source from which it may enter our oxyphosphate; through impure glacial phosphoric acid.

Clinic.—A practical demonstration is more convincing than theorizing. 1. Showing that it is not a caustic by mixing thin and spreading on arm, letting it crystallize, not the slightest impression being made. 2. Showing that by mixing certain proportions of liquid and powder it could be made either acid, alkaline or neutral, but that no free acid is present before or after crystallization; also that the acid could be set free by bringing it in contact with moisture or pressure. 3. Showing that the heat generated by crystallization was but four or five degrees and did not last longer than two or three minutes. 4. Showing that it is as poor a conductor as tooth-bone or ivory; as good a non-conductor as is needed for all practical purposes. 5. Showing specimens which had lain for five days in baths of saliva, water, alkali, hydrochloric acid one-fifth, and anilin. The anilin had not penetrated the oxyphosphate, nor had the other baths affected it. 6. Showing that the oxid of zinc can not contain arsenious acid after being calcined sufficiently for our purposes, that taking about 2200° F. while arsenious acid vaporizes at 400°.

Combining of powder and liquid and placing in cavity are the important points. Line cavity with phosphate and let it harden so that pressure of filling will not set acid free. Oxyphosphate to resist secretions should have heavy pressure.—*Items, Sept. 1900.*

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ARTISTIC REPAIRING OF DEFECTIVE MODELS. By H. A. Pullen, D.M.D., St. Louis. Models of irregularities of the teeth, on separation from plaster impressions, are often found defective in some particular, perhaps only slightly, yet enough to detract to a considerable extent from their appearance, as viewed from an esthetic standpoint. These imperfections may not be due to a faulty impression, in fact, the latter may be perfect, and the model obtained therefrom nearly ruined by the neglect of some slight detail in the processes following the taking of impression.

The more common defects noticed in the model with the causes therefor enumerated, are: *First.* Air-bubbles. Cause, air not forced ahead of plaster in pouring impressions, but buried beneath it. *Second.* Numerous indentations on the surface, due to careless use of the knife in separating. *Third.* A honey-combed appearance of the teeth with crumbling and loss of cusps in separation, especially in the incisor and bicuspid region, due to the use of too thinly mixed plaster. *Fourth.* Fractured or imperfect frenum, caused by enclosure of air-bubble in its impression, or carelessness in separating. *Fifth.* Fractured teeth or cusps, cause: (a) The attempted removal of too large blocks of the impression in separating. (b) Application of force in the wrong direction in separating. (c) Cavities or undercuts. (d) Adherence of the teeth or cusps to the varnishes of the impression. (e) Dropping of the model. *Sixth.* Transfer of the varnishes of the impression to the surface of the model. Cause, too long an interval between pouring and separating or too thick varnishes. *Seventh.* Lumps of superfluous plaster on various parts of the model, due to loss of corresponding parts of the impression. *Eighth.* A roughened appearance of the surface of the necks of the teeth, with noticeable superfluity of contour, due to the non-removal of soft and hard deposits on the teeth before taking the impression.

Preliminary to the repairing of a model that may be defective in any of the above-mentioned ways, one should be provided with an artist's camel's-hair brush, No. 2; a double-ended wax spatula, with small blade sharpened on one edge; a receptacle for water; and a

glass slab with a small pile of plaster on one corner of its surface. To repair air-bubbles, the first defect mentioned above, the brush is saturated with water and the plaster in and around the air-bubbles moistened several times with it, when a small mix of the plaster and water to the consistency of milk is made with the brush and quickly transferred from its point to the bottom of the bubble, repeating until it is filled, when the correct contour and a smooth surface are obtained by a twisting, wiping motion of the nearly dry brush over the surface. Any indentation on the surface of the model may be filled in this manner.

The third and fourth defects require more skill and a knowledge of the minute anatomy of the parts in order to be able to restore by this method an incisor, for instance, which has crumbled to pieces; but after sufficient practice even such a delicate part as the *fraenum labii*, which seldom escapes fracturing in separating, may be built up if its attachments can be seen. Care should be exercised in carving the groove that enough of the approximating fractured surfaces be left towards the labial surface to insure perfect adjustment.

Varnishes from the impression adhering to the cast may be removed by washing with cotton saturated with alcohol.

The seventh and eighth defects require the use of the wax spatula previously mentioned, the large blade being used to remove plaster on the teeth and other portions of the model so disfigured, while the small sharpened blade is essential to the removal of the thin layer of superfluous plaster contiguous to the festoons of the gum, also in carving out any surplus plaster from the embrasures of adjoining teeth, and the cusps of bicuspids or molars which are imperfect. Any attempt at carving beyond the shaving off of superfluous plaster quickly shows its artificiality and should be avoided.

Fractured teeth or cusps have been usually repaired with cement, which is unsightly against the white background of the model, especially in a photographic reproduction.

By manipulating the plaster as in filling an air-bubble, it will serve as a good substitute for the cement in all cases. As it is almost impossible to force plaster of any consistency into a crack, such as is visible on adjusting two fractured portions of a tooth together, it is advisable to widen the crack to a groove—linguolabially for instance, on a fractured incisor, so that the plaster may readily flow into it, when on restoring the contour of the lingual

surface, the crack on the labial surface may be touched lightly with the brush saturated with the thin plaster, and all traces of the fracture will disappear and a firm union result after drying.

The requisites for the successful use of this method of repairing with plaster are—a continually moistened surface of that portion of the model needing repair; frequent small mixes of the plaster to about the consistency of milk with the brush upon the glass slab, sufficient quantity for one mix being obtained by first saturating the brush with water, and then quickly mixing with it all the plaster that adheres to the brush on touching the surface of the pile of plaster on the slab; finally the application of this thinly mixed plaster from the point of the brush to the particular portion of the surface of the model requiring repair.—*Items, Sept. 1900.*

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GINGIVO - STOMATITIS WITH ALBUMINURIA. By Chas. Lee, Paris. Read before the International Dental Congress, at Paris, August, 1900. First case was a dressmaker, about 54. She complained of pain in the mucous membrane of the mouth, which was accentuated by mastication, and attributed her illness to the bad state of her teeth. The first examination revealed much tartar, numerous carious teeth, stumps, and teeth bared from the gums. She wore a plate with six upper teeth. There were also numerous ulcerations on the lower lip, on the inside of the cheeks, on the sides of the tongue, and on the palate. Besides these she presented several local symptoms, such as pain on masticating; thick abundant glutinous salivation, especially in the morning; breath was fetid and repulsive; she had lost all sense of taste, and the submaxillary ganglions were slightly swollen and indurated. Her general symptoms included headache, want of appetite, light diarrhea, indicating a feverish condition. Further examination disclosed the fact that she had Bright's disease, and hypertrophy of the heart.

The second case presented certain points of analogy with the first. This patient, also a woman, was 58 years of age, and had four patches of ulceration in the mouth, two of which were on the palate on a level with the second left molar, which was carious; the other two were situated one on the labial surface of the lower gum on a level with the first molar on the same side, and the other on the same gum, level with the right lateral incisor. The areas

of these ulcerations varied from 5 millimetres to 1 centimetre, their surface being of a stale gray, and their edges irregular. She also complained of intense pain; salivation was abundant, but less in quantity than the first case, the breath was fetid, and examination showed she also was suffering from albuminuria.

On the basis of these two cases M. Lee set out to investigate the connection between Bright's disease and gingivo-stomatitis, and the results of his investigations led to this important conclusion—that uremic stomatitis, like the stomatitis of diabetes, like that of pregnant women, and like that of many other states, is a septic condition, which has for its sole and only pathogenic agency buccal polymicrobism. The two cases given above were suffering from albuminuria, which by enfeebling the economy had destroyed its equilibrium. The body in general, and the buccal cavity in particular, were in a state of morbid receptivity, and the infection naturally sought the weakest part. Now in the two cases the most weakened part was the buccal cavity, and in consequence of the bad state of the teeth polymicrobism was easily set up.

The conclusions arrived at are set forth by the author as follows: (1) Ulcerative membranous stomatitis in patients suffering from Bright's disease is a polymicrobial septic stomatitis which may be classed with the variety of septic stomatitis described by Dr. Lebedinsky; (2) such a stomatitis may pass through various conditions, it may be erythematous, then ulcero-membranous, or even gangrenous; (3) the stomatitis of albuminuria commences almost always on a level with carious teeth or infected stumps; (4) those who are suffering from albuminuria may safely avoid stomatitis if their mouths are kept in a hygienic condition.—*Brit. Dent. Jour.*, Sept. 1900.

SENSITIVE DENTIN.—Two doses of chloral hydrate, of 10 to 15 grains each, taken one the evening before on retiring, and the other next morning before operation begins, is better than cataphoresis or anything else I have ever tried. Dr. H. E. Beach suggested this several years ago, and he is entitled to the honor.—John T. Crews, *Dental Headlight*.

SIGNIFICANCE OF TEETH IN DERMOID CYSTS.—Dr. S. W. Bandler (*Weiner klin. Rund.*) disputes the assertions of Wilms, Pfannenstiel, and Pick that teeth found in a dermoid cyst are necessarily of pathogenetic origin. He believes, from his study of twelve cases, that cephalic parts found in dermoid cyst are of ectodermic origin, and are not due to an unimpregnated ovule, the development of whose cephalic end inhibits the growth of the rest of the body.

Letters.

NEW YORK LETTER.

To the Editor of the Digest,

MR. EDITOR: October has seen the return of most of the absentees, and from the coat of tan which most of them carry the vacation must have been spent in the country.

The First District Society convened Oct. 9, with a good attendance of young practitioners, but the graybeards were noticeably absent. There was a lively discussion on root-filling, and we could not help noticing how many men think eventually all others can be brought to their method of practice. A universal scheme for filling roots is just as impossible as one for filling teeth generally.

The Galveston dentists were practically sympathized with; \$126 was raised and ordered to be telegraphed to them the next day. This is right. These generosities stand over against the opprobrious epithets that have been hurled at us. Never have we seen a time when a worthy appeal was not quickly responded to by the profession.

The Odontological Society held its first meeting since the summer vacation, with a very good attendance. Dr. Herschfield of Paris reported a paper, giving a description of how he corrected an irregularity of a superior incisor by an inlay. The palatal and labial surfaces were turned to the proximal, and a porcelain inlay was fitted in, giving full correction of the facial expression. In the discussion some thought an artificial crown preferable, but the living tooth had the most advocates. The inlay question was talked over earnestly and far more favorably than has been the case formerly, and it was quite agreed that skill controls success with either high or low fusing bodies. Dr. Head of Philadelphia spoke at length, for he had visited Dr. Jenkins of Dresden during the summer, and many were anxious to hear from him. Dr. Head also discussed the merits of gold and platinum matrices, and gave his preference decidedly for gold, claiming that it could be pushed to greater perfection of adaptation to the cavity. Considerable emphasis was put upon the simplicity of cavities.

Dr. S. G. Perry exhibited some choicely made and very thin rub-

ber disks, having carborundum incorporated in them, for making undercuts in the inlays.

Dr. Norman W. Kingsley appeared on the floor for the second time in some seven or eight years. His fiftieth anniversary banquet has fortunately turned him again to future public service. It is stated on good authority that he gave the name which the society bears.

One thing seems strange to us, that there was not a mention in either society of the Paris Congress. From all quarters we hear that while Paris did her best, both the congress and exposition were far behind those of Chicago in '93.

Dr. Jarvie introduced the idea, perhaps to arouse discussion, of having a woman go to houses, by recommendation, for the purpose of giving monthly cleaning of teeth. The plan was suggested to him by a lady patient, who thought it would be feasible, just as one has a manicure, etc. It was emphasized in his mind by having a woman dentist call who was quite discouraged at her failure to obtain a regular clientele. The idea was discussed without much favor or enthusiasm, but we believe considerable good might be accomplished by bringing the definite attention of the feminine portion of families to their teeth each month. If a few leading dentists would endorse the plan to patients in their locality it would probably become practicable.

It was amusing to hear some dentists say that harm could be done by too much cleaning of teeth. We have never seen any harm from it, and hardly think such a result is ever attained. Dr. D. D. Smith of Philadelphia has been introducing among his patients a practical plan for this monthly care of teeth by contract, and he almost guarantees an immunity from caries, emphasizing the matter to young patients at the start. He fully described the idea in the September DIGEST, page 643.

This preliminary practice on young children can not be too strongly emphasized. Dr. Smith's movement along this line has had a tendency to systematize the practice, and if carried out it will do much to bring about a more favorable "environment" around the mouth and teeth, and also do much to check what would in many cases be destructive under the influence of "predisposition." We learn that this matter will be especially discussed at the Northeastern Dental Association meeting this month. No man ever em-

phasized more the early cleansing and definite care of children's teeth than did the late Dr. Riggs. If dentists do not know the value of cleansing teeth, and the polish they are capable of taking, there is much to learn, for in that class of teeth which is predisposed to caries, polishing and frequent cleansing gives an almost absolute immunity to decay. Practice would be a revelation to anyone ignorant along this line. True prophylaxis can begin only here.

Cordially yours,

NEW YORK.

CLOSURE OF A CLEFT PALATE BY LINGUAL IMPLANTATION.—In a case of cleft palate in which the Langenbeck as well as the Davies-Colley operation failed to cover the immense congenital defect, I recently implanted a portion of the tongue. The ease with which even extensive resection of the tongue is tolerated by carcinomatous patients induced me to form a lateral flap from the tongue, which, after being turned and reflected near the base, was united with the freshened edge of the cleft of the same side. The gaping wound margins of the side of the tongue were accurately united then and the floor of the mouth and the lingual angle packed with iodoform gauze. During the after-treatment a mild solution of boric acid was sprayed through the nostrils every fifteen minutes. Liquid diet was given exclusively. After nine days the basis of the flap was severed, and one week later the flap was united with the opposite margin of the cleft according to the usual uranoplastic procedures.—Dr. Carl Beck, in *N. Y. Med. Jour.*

BORAX AND FORMALDEHYD AS PRESERVATIVES OF FOOD. By Dr. W. D. Halliburton.—The writer urges that the use of foreign substances as preservatives of foodstuffs should be abandoned and replaced by a more wholesale use of the method of cold transport and cold storage. An antiseptic is inimical to the life of the organisms that cause putrefaction; it cannot therefore be harmless to the vital processes in the higher animals. Dyspeptic and other troubles follow the use of foods preserved with borax. Even if, as in the case of boric acid and borax, the poison is not cumulative, the continuous passage of foreign substances through the kidneys must be harmful to those organs. The writer has carried out experiments, the results of which go to show that borax and formaldehyd should not be used as food preservatives. Borax, while a very inefficient antiseptic, completely inhibits rennet activity when added to milk in the proportion of one part of borax to 1,000 parts of milk. Formaldehyd, while a powerful antiseptic, renders foodstuffs very indigestible. A percentage of 0.05 part of formaldehyd renders gastric digestion (i. e., with pepsin and hydrochloric acid) almost impossible. Pancreatic digestion is prevented by it even more readily. Pancreatic digestion of starch and rennet action on milk are both markedly delayed by the presence of formaldehyd. So that the injurious effect produced by these preservatives upon the enzymes of ordinary digestion furnishes a cogent reason why they should not be used in the preservation of food.—*British Med. Jour.*

The Dental Digest.

PUBLISHED THE TWENTY-EIGHTH DAY OF EVERY MONTH
At 2231 Prairie Avenue, Chicago,
Where All Communications Should be Addressed.

Editorial.

CERTIFICATES OF MEMBERSHIP IN PROTECTIVE ASSOCIATION READY FOR DISTRIBUTION.

By the time this issue of the DIGEST is in the hands of our readers the long-expected certificates will be engraved and ready to mail. The work of affixing names to same and of addressing mailing envelopes cannot be undertaken until a few days later. If you have changed your address during the last few months, or if from some mistake in mail matter which you have received from this office you believe your name and address are not correctly entered upon the membership books of the Protective Association, we would urge that you notify the chairman of that organization immediately. Every member in good standing, that is, who has paid \$20 to cover the membership fee and assessment, may expect his certificate between now and the end of November. There is, however, a great deal of work incident upon making out, signing and addressing six thousand of them, so no one need be alarmed if the certificate does not arrive before the end of the month.

CROWN COMPANY'S LATEST MOVES.

In the case of the International Tooth Crown Co. vs. Dr. Joseph S. Vinson of Newark, N. J., an attempt was made Oct. 9 to secure a fine and commitment for contempt of court of Dr. Vinson for refusal to attend upon preliminary examination of himself as a witness under an order obtained by the Crown Co., but Federal Judge Kirkpatrick who heard the case took it under advisement. We confidently believe that the order will be denied.

On Oct. 12 the Crown Co. attempted to compel Dr. Colin S. Carter of New York City to file a bill of particulars in the litigation against himself, identifying certain facts as evidence which we proposed to rely on as defenses in the Carter case. Judge Lacombe

took this matter under advisement, but the Crown Co.'s attorney abandoned and withdrew his motion before a decision of court was handed down.

We have just learned that Judge Lacombe, upon our motion and petition, has directed Dr. L. T. Sheffield, president of the International Tooth Crown Co., and his brother-in-law, James Orr Kyle, the so-called defendant in the recent litigation of the Crown Co. against Kyle, when the Low patent was again sustained, to attend and submit to an examination before a Master in Chancery as to the allegation of the collusion and fraudulent character of that litigation.

IS THE DENTAL TRUST A BENEFIT TO THE PROFESSION, AND IF NOT, WHY IS IT ALLOWED TO EXIST?

In starting a discussion of this subject, we would first quote from the New York *Tribune* of recent date, which says—"The worst enemy of social order to-day is not the beery brawler, but the law-breaking and law-avoiding corporation in its insolence of wealth and influence. *Corporate anarchism, that is the name.*" These few lines certainly deserve careful consideration by thinking people. Few admit that trusts are a good thing, but while the great mass of the people wish to see them wiped out, and while the question is made an important issue in the present presidential campaign, no remedy by legislation has yet been discovered. It is not our intention, however, to go into the general question of trusts, but merely to show the profession how dangerous an organization the Dental Trust is, and also to point out the means of suppressing it.

The word trust, as it is generally applied to the modern consolidation of firms, is really a misnomer. Strictly defined, a trust is an illegal agreement between different firms or individuals to control prices and markets. The trust of to-day is really a big corporation that proceeds, under the protection of the law, to do the very things that the actual trust can not do without violating the law. The great industrial organizations of the present time are therefore trusts *de facto* if not *de jure*.

The opposition to trusts is usually either academic or partisan—the former abstruse and theoretical, the latter illogical and extreme. We do not intend to consider the question from the standpoint of either the stump-speaker or the political economist. Much of the

current discussion is wide of the mark, and we deplore the wholesale condemnation of corporations. Many of them are exemplary concerns, and much of the most important work of the world could hardly be accomplished without them. In so far as the modern corporation represents the successful application of the spirit of intelligent organization and cooperation, it is a good thing; but when it seeks to enable a few greedy and unscrupulous individuals to plunder an industry or a community, it becomes a menace to society and should be suppressed. Individuals have some inherent rights, but the corporation is wholly a creature of the law. What the law has made it should control. Law has been defined as a waiver of the individual right for the good of the whole number. It is therefore manifest that the law should create nothing subversive of the public good.

A striking illustration of the good and bad corporation can be found in our own profession. The Dental Protective Association is a corporation of an exemplary character, and the object of its organization is to accomplish the greatest good for the greatest number. In it is exemplified the principle of cooperation and mutuality. The humblest dentist by becoming a member benefits his fellows and is himself benefited. What would have been impossible for the individual has been brought to the greatest culmination of success by cooperation. Like insurance companies, it is an example of what may be called a beneficent corporation. On the other hand, the trust which seeks to control all our dental supplies is a pernicious corporation which extorts from the many to benefit the few.

The corporation laws of the several states have been warped from their original intent and made to encourage rapacity. It is generally admitted that the trust evil could be corrected by judicious legislation, and it is urged that progressive criminality calls for progressive prevention. The difficulty lies in the conflicting laws of the different states, and the inability of the national government to regulate corporations which operate under state charters. A healthy public sentiment is being rapidly engendered, however, which should ultimately crystallize into some restrictive measures.

Pending a legal settlement of the vexed question, there is a means of curtailing operations of the trusts, that if pursued continuously would drive many of these mammoth corporations into the hands of the sheriff. We allude to the purchasing power of the

individual. The great majority of the dental profession do not believe that the Dental "Combination" is a benefit, and they rail against this enormous and disgraceful trust which is robbing them. As yet, however, they do not seem to have realized how the evil may be suppressed, and how the power lies entirely in their own hands. If every dentist were to resolve that he would not buy any article made or controlled by the Trust that could be obtained elsewhere, the combination in dental supplies, formed to keep up prices and prevent competition, would soon be forced to separate into its component parts. At present the Dental Trust, which desires *commerce without competition*, is a despotism tempered only by the existence of a few firms outside the unlawful Combination. If the dentists were more keenly alive to the danger which confronts them, and more determined to use their purchasing power as a weapon, competition would be engendered and strengthened, and the trust evil would be minimized if not entirely eradicated from our profession without waiting for the slower legislative remedy that ultimately may or may not be enforced.

Notices.

OHIO STATE DENTAL SOCIETY.

The thirty-fifth annual meeting of this organization will be held at Columbus Dec. 4-6, 1900, at the Great Southern Hotel.

S. D. RUGGLES, Sec., Portsmouth.

ILLINOIS STATE BOARD OF DENTAL EXAMINERS.

At the recent annual meeting of this board the following officers were elected for the ensuing year: Pres., H. W. Pitner, Fairfield; Sec., J. G. Reid, 1006 Champlain Bldg., Chicago.

No licenses will be issued by the board between Dec. 1 and 15, inclusive.

LATEST DENTAL PATENTS.

- 659,196. Artificial tooth-crown and post, A. P. Johnson, Ada, Minn.
- 659,216. Dental chair, C. B. Dowling and W. D. Durham, Swansea, S. C.
- 659,531. Dental articulator, G. R. Johnson, Hastings, Mich.
- 659,684. Rubber-dam holder, J. A. W. Lunborg, San Francisco.
- 659,747. Dental vulcanizer and celluloid press, H. Hartwig and A. W. Feltman, Chicago.
- 659,871. Dental articulator, T. G. Lewis, Buffalo, N. Y., assignor to Buffalo Dental Mfg. Co.
- 659,886. Dental cervical clamp, C. G. Capwell, Boston.

INSTITUTE OF DENTAL PEDAGOGICS.

The seventh annual meeting of this organization will be held at the Maxwell House, Nashville, Tenn., beginning at ten o'clock Dec. 27, 1900, and continuing three days. The program will appear later in all the dental journals. Everyone interested in dental teaching should feel it his duty to attend, as it is his privilege to speak on any subject on the program. The interest of last year will be maintained, and the plan of developing thoroughly a few topics given a trial. A cordial invitation is extended to the profession, and especially to the teachers, to be present.

H. W. MORGAN,
D. M. CATTELL, }
W. E. WILLMOTT, } Ex. Com.

NORTHEASTERN DENTAL ASSOCIATION.

At the sixth annual meeting of this organization, held at Providence, R. I., Oct. 16-18, 1900, the following officers were elected for the ensuing year: Pres., A. J. Flanagan; First V. P., C. F. Bliven; Second V. P., A. W. Crosby; Sec., E. O. Kinsman; Assistant Sec., F. M. Wetherbee; Treas., J. T. Barker; Librarian, C. H. Riggs; Editor, F. T. Murlless, Jr.

During the session the Philadelphia Alumni Association of New England was formed with the following officers: Pres., Jas. McManus; Sec. & Treas., D. W. Johnston; Ex. Com., one member from each New England state. All graduates of the Philadelphia Dental College residing in New England are eligible to membership, and should send their names to Dr. D. W. Johnston, New Haven, Conn.

NOTICE CONCERNING NEW COLLEGES.

To Whom It May Interest:—At the annual meeting of the National Association of Dental Faculties, held at Niagara Falls, 1899, the following action was taken: *Resolved*, "That a commission, consisting of three persons, be appointed, whose duty it shall be to take cognizance of, investigate and advise with any parties contemplating the establishment of a new college or the reorganization of an old one."

In the performance of the duties of this commission it shall be competent to take into consideration the following points: All the circumstances that attach to it; the motive that prompts such an organization; the need for it; the proposed locality; the character and ability of those who propose to conduct it; the resources that may be available for its establishment, and any other points that have a bearing for or against the starting of a proposed college. Full knowledge on these points would enable the commission to advise wisely.

Any person or persons having in contemplation the organization of a new dental college, or the reorganization of one already in existence, are requested to communicate with this commission for conference.

It shall be the duty of this commission to report to the parent body at each annual meeting, giving in detail such facts and conditions pertaining to the subject as the commission may find.

Commission: { J. TAFT, Chairman, Cincinnati.
GEO. E. HUNT, Indianapolis.
FRANK HOLLAND, Atlanta.

News Summary.

THE TEETH of time must be those a dentist supplies on credit.

WILL A. BOYD, 30 years old, a dentist at Salt Lake City, died Sept. 10, 1900.

STUMP ORATOR.—“A dentist who talks about himself.”—*Facts, Fads and Fancies.*

L. H. BARTHOLOMEW, 52 years old, a dentist at Terre Haute, Ind., died Oct 17, 1900.

E. F. WILSON, 81 years of age, a dentist at Montclair, N. J., died Sept. 17, 1900.

F. GODBOLT, 63 years of age, a dentist at Vicksburg, Tenn., died Oct 2, 1900, from cancer.

A. E. VERRINDER, 42 years old, a dentist at Santa Clara, Cal., formerly of San Francisco, died Oct. 14, 1900.

P. J. SHAW, a traveling dentist, was killed by a train on a railroad bridge near Johnstown, Pa., Sept. 27, 1900.

THOS. B. DELCHER, 25 years old, died Oct. 9, 1900, at Dade City, Fla. He had just graduated from the Baltimore Dental College.

ED HARRISON, a young dentist at Terre Haute, Ind., committed suicide Oct. 23, 1900, while despondent over lack of employment.

J. E. ELLSWORTH, a dentist at Aberdeen, S. D., was shot Sept. 22, 1900, by a man who claimed that Ellsworth had broken up his home.

ALCOHOL LAMP EXPLODES.—A dentist at Newark, Ohio, was badly burned Oct. 12, 1900, while filling an alcohol lamp, by the fluid igniting.

ENCOURAGING.—A Brooklyn dentist advertises, “A sure thing the first haul, or if not, the weather-strips are so arranged that no sound can escape.”—*Argus.*

DEATH FROM CHLOROFORM.—A woman at Ovid, N. Y., died Oct. 3, while a tooth was being extracted. The dentist states that he administered less than an ounce of chloroform.

ABBOTT DENTAL CLUB was organized at Des Moines, Ia., Sept. 21, 1900, and the following officers elected: Pres., G. W. Miller; V. P., F. M. Hunt; Sec., F. W. Knott; Treas., H. Keeler.

SOUTHWESTERN IOWA DENTAL SOCIETY, at its meeting Oct. 16, 1900, elected the following officers: Pres., F. S. Schadel; V. P., F. M. Kelsay; Sec., F. P. Wells; Treas., G. E. King.

PENNSYLVANIA STATE EXAMINING BOARD.—Gov. Stone appointed on Sept. 18 H. B. Roberts of Philadelphia a member of the board, vice P. S. Moore. H. F. Dupuy of Pittsburg was reappointed.

WM. SCHELD, aged 58, a dentist at New Haven, Conn., died from apoplexy Oct. 1, 1900. He had extracted a tooth for a patient and became unconscious immediately after, dying in an hour.

VULCANIZER EXPLODES.—This time it is at Weedsport, N. Y., in the office of A. H. Sprague. The windows were broken and most of the smaller articles in the room destroyed, but no one was injured.

BLOOD-POISONING CAUSES DEATH.—A woman at Bellevue, Ohio, died Oct. 18 from blood-poisoning. Several weeks before all her teeth were extracted under gas, and blood-poisoning set in almost at once.

ILLINOIS FIRST DISTRICT DENTAL SOCIETY, at its eighteenth annual convention Sept. 25-26, 1900, elected the following officers: Pres., T. F. Henry; V. P., W. E. Mabee; Sec., J. F. Kyler; Treas., J. W. Marshall.

CAN NOT PATENT THE TEETH.—The patent office at Washington has refused to patent "Roosevelt's teeth," a puzzle somewhat resembling the "Pigs in Clover." The inventor utilized only the upper set of teeth as a model.

DENTISTS FOR PHILADELPHIA HOSPITAL—The Board of Charities has decided to appoint four dental students for service in this institution, and they will be chosen one each from the four leading dental colleges at Philadelphia.

SOUTHERN CALIFORNIA DENTAL ASSOCIATION, at its annual meeting Oct. 9-10, 1900, elected the following officers: Pres., A. H. Palmer; First V. P., H. W. Moore; Second V. P., R. F. Phillips; Sec., L. E. Ford; Treas., J. M. White.

DENTAL SALESMAN ROBBED.—A thief changed the claim checks on some baggage at the railway station in Joliet, and thus secured a valise containing several hundred dollars in gold, silver and checks which belonged to a dental salesman.

HEALTHY TOWN.—The water carts of a certain city are decorated with patent medicine advertisements. On seeing one of them a farmer remarked, "It is no wonder this town is so healthy if they sprinkle the streets with Blank's Sarsaparilla."

NORTHERN IOWA DENTAL SOCIETY, at its annual meeting Sept. 4-6, 1900, elected the following officers: Pres., W. R. Clack; V. P., J. A. Walter; Sec., Wm. Finn; Treas., H. W. Rizer. The next meeting will be held at Lake Okoboji Sept. 3-5, 1901.

HARTFORD (CONN.) DENTAL SOCIETY at its annual meeting Oct. 9, 1900, elected the following officers: Pres., N. J. Goodwin; Sec., Edward Eberle; Treas., E. R. Whittford; Librarian, G. O. McLean; Ex. Com., Henry McManus, C. H. Riggs, H. J. Pillion.

WRONG TOOTH PULLED; DAMAGE SUIT.—A fourteen-year-old boy at New York City, through his guardian, has sued a dental parlor for \$2,000 damages, because by mistake an operator in that establishment pulled a sound tooth instead of the one which was decayed.

SAVING HER TEETH.—"Why, Norah," said Mrs. K. to the new cook, "I thought you said you knew how to make a nut cake." "An phwst is thot if it isn't a nut cake, ma'am?" "But you've put the nuts in whole." "Begorry, an' I t'o't yeez was as able to crack 'em as I was. Yer teeth's as good as mine."—*Philadelphia Times*.

LICENSE NECESSARY IN GRAND RAPIDS.—The traveler for a dental supply house recently found out to his sorrow that he must have a thirty-day license, cost \$2, before he could sell goods in Grand Rapids, as under the terms of a new city ordinance salesmen are not allowed to sell their samples.

PAINLESS EXTRACTION.—First dentist: "The fact is, I've got gentleness down to such a fine point that my patients go to sleep while I'm pulling their teeth." Second dentist: "That's nothing! Mine are beginning to have their photos taken while I operate, because they always have such a pleasant expression on their faces."—*Puck*.

STUDENT'S MEDICAL DICTIONARY. By George M. Gould, M. D., A. M. This work, which has been enlarged and contains many illustrations, has reached its eleventh edition. It contains many useful tables and reliable information for the busy practitioner as well as the student. Philadelphia: P. Blakiston's Son & Co., 1900. Price, \$3.50.

DANGERS OF FALSE TEETH.—According to an English newspaper, a man was undressing on the seashore preparatory to bathing. There was a cold wind, and the bather while shivering with cold swallowed his false teeth, which choked him to death almost instantly.——An old woman swallowed an upper plate while eating, and death was caused by syncope.

MEXICO NOT TO BE FOOLED.—Although Mexico may be behind the times, her laws on patent medicines might well be universally adopted. It is reported that if in Mexico a bald-headed man buys a bottle of hair-oil, and it fails to accomplish everything set forth on the label as regards the restoration of hair, etc., he can have the seller arrested and put in jail.

"ANESTHETICS, THEIR USES AND ADMINISTRATION." By Dudley W. Buxton, M. D., B. S. This is the third edition of the work by this authority on anesthetics. It is brought well up to date and covers the field of anesthesia from a practical viewpoint. We commend the book to students and anesthetists generally. P. Blakiston's Son & Co., Philadelphia. Price, \$1.50 net.

INDIANA STATE BOARD FOOLED.—It is reported that a negro was practicing dentistry in Indianapolis without a license. He refused to take the examination, and the state board brought action against him. The case was continued several times and the defendant was meanwhile studying. When he finally had to take the examination he passed without difficulty and is now a regular practitioner.

DENTISTS AS DETECTIVES.—Dr. Hans Gross of Czernowitz, in the second volume of his book on Criminal Anthropology, shows in detail how dentists can be of great service in the identification and discovery of criminals. After the terrible fire at the Charity Bazaar in Paris in 1897 many of the victims were identified by their teeth. Dr. Gross also cites many cases where criminals have been apprehended in this way.

"FACTS, FADS AND FANCIES ABOUT TEETH." Compiled and edited by Henry L. Ambler, M. S., D. D. S., M. D. This is a volume of over three hundred pages, beautifully bound in cloth and finely printed on good paper. It is a

most unique, entertaining and useful little book, and is deserving of a place both in the dentist's library and on the waiting-room table. Published by the Helman Taylor Co., Cleveland, O. Price, \$2.

QUEER LEGAL QUESTION.—A dentist in Montreal, Canada, is threatened with arrest for receiving money under false pretences. The patient paid \$125 in advance for some work, which has not been done, and now has no gold either in his pocket or in his teeth. It may be decided that the dentist is liable only to action in the civil courts for having broken his contract. This is the first case of the kind, and will probably establish a precedent.

THIRD SET OF TEETH.—A versatile newspaper correspondent of the *Indianapolis News* reports that a woman in the state, 72 years old, is cutting her third set of teeth, and that three above and two below have already appeared. Furthermore, her hair, which has been snow white for fifteen years, is turning black and glossy. The correspondent does not state that she has taken to rolling a hoop or playing with dolls, but we presume that will be next in order.

MICHIGAN STATE BOARD AROUSED.—It is stated that the prosecuting attorney of Oakland county has refused to bring to trial several unlicensed dentists within his jurisdiction. In case he continues to neglect his duty charges will be filed with Gov. Pingree. Of the twenty-one candidates for license only eleven were successful at the last examination, most of the failures being due to lack of mechanical efficiency rather than to want of technical knowledge.

COMMON VS. HIGH SCHOOL EDUCATION.—Gov. Voorhees of New Jersey has decided that the meaning of a "common school" education can not include that received in a high school, for the latter is the exceptional school. The question was brought up by the New Jersey State Board of Dental Examiners, which had refused applicants because they did not have a high school education. The Governor's opinion has been sustained by the state superintendent of schools.

WISCONSIN LITIGATION MOVES ON.—It will be remembered that the Wisconsin State Board of Dental Examiners some time ago refused to grant a license to M. J. Rice of Sparta, because they did not think the college from which he had been graduated lived up to the necessary requirements. The matter has dragged along through the courts, and now the supreme court has settled a technicality, instead of deciding the main issue, so that the matter may not come up again until next spring.

SALOON OBJECTIONABLE TO COLLEGE.—A dental college at Des Moines, Iowa, has petitioned the city council not to grant a license for the establishment of a saloon on the first floor of the college building. The objection is based on that section of the code which provides that no saloon may exist within three hundred feet of a schoolhouse. The question is raised whether the dental college is a schoolhouse under the circumstances. If so, three saloons already operating within three hundred feet of the college may be closed.

ESOPHAGOTOMY MAY SAVE LIFE.—A woman in Williamsburg, Pa., swallowed her set of false teeth and it lodged in the esophagus, slowly choking her to death. Great care was necessary during operation, and afterward, owing to the danger from the slightest movement of the muscles of the throat and head while wound was healing, so the patient's head, arms and trunk were incased in a plaster cast. Her lips are moistened with water every few moments, but artificial feeding is employed. The surgeon in charge believes patient will recover.

FRATERNITY BANQUET DISASTROUS.—The Delta Sigma Delta Fraternity gave a banquet Sept. 24, at the Chicago Athletic Association Club House. No wine was served, but twelve of the twenty-four dentists present were taken very sick soon after, and ptomain poisoning is suspected. The dentists who suffered most severely are J. W. Slonaker, G. N. West, G. W. Haskins, F. H. Zinn, L. O. Green, L. S. Tenney, R. Beck, A. G. Johnson, J. E. Nyman, A. B. Allen, P. J. Kester and D. C. Bacon. There are several teetotalers in this list, so we incline to the ptomain-poisoning theory.

MOUTH WASH and gargle for sweetening the breath:

B. Acid salicylici,				
Sodii bicarb,				
Sacchari.....	aa gr.	xv.		
Spt. vini rect.....	3 i.			
Spt. menth. pip.....	gtt.	x.		

M. S. Teaspoonful in a small cupful of hot water.

—Palmer, *Med. Rec.*

MEDICINE AS A BUSINESS PROPOSITION.—By Dr. G. F. Lydston. This article, which is amusing and instructive, may be summed up in the opening words: So live that when thy summons comes to join the innumerable caravan which moves to that mysterious bourne peopled by doctors who have died of innutrition, thou go not like the general practitioner called at night, scoured from his office, but, sustained and soothed by the motto, "Never trust," approach the grave like one who wraps his stocks and bonds about him and lies down to pleasant dreams.—*N. Y. Med. Jour.*

ABSENT TREATMENT.—A young woman of Troy tells a good story at the expense of her aunt, who is a Christian Scientist. The latter had observed with a growing pity a cripple who passed her house daily. His efforts to walk were so tiresome that she determined to try the "absent treatment" on him. After the first few days of her self-imposed task she thought she noticed signs of improvement, and one day he appeared without his crutch and walked with hardly a limp. She was so overjoyed that she rushed to the street, seized the man's hand and said: "My dear friend, you must excuse me, but I cannot refrain from rejoicing with you over your cure. I have used faithfully the 'absent treatment' for your infirmity, and I cannot tell you how happy I am to see by your walk you have recovered." When the man rallied from the bewildering effect of this sudden outburst of "present treatment" he replied: "Thank ye kindly, ma'am, for your interest in me. I don't suppose it has hurt me any. But, to tell the truth, I have just got a new wooden leg, and it works splendid, ma'am."—*N. Y. Tribune.*

HEALTH COMMANDMENTS.—1. Thou shalt have no other food than at meal-time. 2. Thou shalt not make unto thee any pies, for the dyspepsia will be visited upon the children to the third and fourth generations of them that eat pie, and long life and vigor upon those that live prudently and keep the laws of health. 3. Remember thy bread to bake it well; for he will not be kept sound who eateth his bread as dough. 4. Thou shalt not indulge sorrow nor borrow anxiety in vain. 5. Six days shalt thou wash and keep thyself clean, and the seventh take a great bath, for in six days man sweats and gathers filth and bacteria enough for disease; whereupon the Lord has blessed the bathtub and hallowed it. 6. Remember thy sitting-room and bed-chamber and keep them ventilated. 7. Thou shalt not eat hot biscuit. 8. Thou shalt not eat thy meat fried. 9. Thou shalt not swallow thy food unchewed, or highly spiced, or just before hard work, or just after it. 10. Thou shalt not keep late hours in thy neighbor's house, nor with his cards, nor his glass, nor with anything that is thy neighbor's.—*Ex.*

HOW FROZEN MEAT DETERIORATES.—Meats frozen in cold storage for long periods do not undergo organic changes in the ordinary sense—that is, they do not putrefy, soften or smell bad, but they certainly do deteriorate in some intangible way. After a certain time frozen meat loses some life principle essential to its nourishing quality. Such meat lacks flavor; it is not well digested or assimilated. Its savorless condition cannot be remedied or successfully disguised by the use of sauces and condiments. Those who eat cold storage meat for any length of time develop diarrheal disorders, lose in weight, and would eventually starve to death unless a change of diet were made. The same reasoning applies to tinned fruits and vegetables. They should not be used after a certain period has elapsed. Especially should people be warned against using stale eggs and old milk and cream. Milk and cream are kept for days, rancid butter is washed and treated chemically, but all food, and especially cold storage food, is damaged by long keeping, and will not nourish the body properly. There is the greatest abundance of food, but it does not satisfy.—*Sanitary Record.*

FATAL MALIGNANT ENDOCARDITIS DUE TO DENTAL CARIES.—Dr. W. Ewart described a case of fatal malignant endocarditis and right embolic hemiplegia apparently due to dental caries and stomatitis, treated by antistreptococcal serum and by saline infusions. The case was of the usual type. Hemiplegia was present on admission, and a rough murmur, increasing in intensity from day to day, was heard over the aortic area. The mouth was foul, with many decayed stumps and a fetor like that of dead bone. No other departures from health and no history of any wound were discoverable. Injections of antistreptococcal serum and larger ones of saline solution were employed. The latter in one or two cases had the addition of three-quarters of a grain of cacodylate of sodium to the pint. The patient died and no other source of infection except the mouth could be discovered. Dental hemorrhage had been noted by several writers on this disease, and Dreschfeld had quoted cases where stomatitis was present. This case must either be termed idiopathic or the mouth must be considered the point of entrance for the mi-

crobes. He preferred the latter view, and urged that such an easily examined cavity as the mouth should not escape examination in future cases.—*Brit. J. D. S.*

SURGICAL TREATMENT OF TRIGEMINAL NEURALGIA.—Victor Horsley has in twenty-one cases removed the Gasserian ganglion for the cure of trigeminal neuralgia, limiting this term strictly to what was originally called *tic dououreux*. In the early stages the disease can be treated by drugs, but neither drugs nor electricity bring about a cure. All clinical evidence seems to point to the fact that it begins in the peripheral branches of the fifth nerve, and creeps as an inflammatory process up the peripheral branches of the nerve until it reaches the Gasserian ganglion. The writer says that out of the twenty-one cases operated on there were only two deaths. He has operated on four patients over eighty years of age, so that age itself is not necessarily a bar to the operation. In no one of his cases has he seen a recurrence, and his experience extends over five years.—*Med. Rec.*

BACILLUS AGNOSTIC.—(After Longfellow—about nineteen years):

In from his rural dominion,
Fresh from his rustic location,
Came the bacillus agnostic,
Rank disbeliever in microbes.

Talked he right bold to the doctors—
Those who believe in the ptomaines—
Thus spake Reub, sore on such folly:

“ Long years ago in the country
Had we a place called a schoolhouse;
Always without ventilation,
Ever without any safeguard
‘Gainst the onslaught of disease.
Never an oven for pencils,
Never a book fumigator,
Never a bit of precaution
Other than such as the beasts have.
(Some asafetida, surely,
Eke, some small baglets of sulphur.)
Drank all we brats from one tincup,
Aye, from one bucket we guzzled;
Some even poured back their leavings!
Sometimes a slate that was borrowed,
Bearing nine kinds of dried moisture,
Had to be cleansed before using—
Used we our tongues for the cleansing.
Yet was there none of us ailing;
Ne’er had we heard of the microbe.”

Thus the bacillus agnostic,
Rank disbeliever in ptomaines.
Silence from all of the doctors.

—*Indianapolis Journal.*

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